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Improvement in Galvanic Batteries.

The accompanying engravings represent an improvement in connecting clamps for the plates of galvanic batteries, for which a patent was granted to Charles T. Chester, of this City (New York,) on the 15th of last May.

The nature of the invention consists in the use and combination of brass clamps with insulated wooden supports, so that the plates immersed in the exciting fluid are insulated from each other, thus preventing local action, while at the same time the plates can be removed, cleaned and replaced, or their size increased or diminished without stopping the action of the battery.

Fig. 1 is a perspective view of one modification of the improvement connected to the plates, without the cups ; and fig. 2 is another modification of it applied to a battery of five cups ; T T represent the cups ; P P represent the platina, and Z Z the amalgamated zinc plates. A is a piece or strip of highly insulated wood having secured to it on opposite sides (fig. 1,) metal clamps, B, for holding the zinc and platinized plates, Z P. These are secured in position by thumb screws, as shown, and the connection between the clamps is made with stout copper wires, C C. S S represent binding screws for making the circuit connections with wires from one battery to another. In fig. 2, A represents the same insulated wooden bar, but the clamps are all on one side of it, and no wire connections like C C (fig. 1) are used. Each clamp has two screws for binding the plates, the one for a platina plate, P, in one cup, and the other for a zinc plate, Z, in another cup, as shown, and thus no two plates in one cup have a metallic connection. The plates are varnished above the liquid in the cups to prevent the acid flowing up by capillary attraction and injuring the screws of the clamps, and the insulating quality of the bar, A. It will be observed that a plate can be put in and taken up by merely turning one of the screws to the right or left, thus affording the greatest facility for cleaning and changing them.

The tumblers or cups are coated with Faraday's Electrophorus, and all communication is thus cut off with the surface of the glass cells. The advantages derived from these arrangements, we conceive, will be appreciated at a glance by those acquainted with galvanic apparatus. The prevention of local action in the individual cells, and cross-fire between the different cells, the facility afforded for taking out the plates, cleaning, and changing them, by substituting an extra plate in the battery, when one is lifted out, so as not to interrupt the flow of the current are all evident. The solution used in this battery is dilute sulphuric acid, and one has been in use for five months without being taken down. It is cleanly and healthy, and can be kept in the operator's room, requiring to be noticed but once a-day, and not a constant attendance day and night, like Grove's battery. The battery of Grove is compact and very powerful, but it is expensive and unhealthy. It requires a separate room because the noxious fumes given off by the nitric acid are dangerous. It has also to be renewed very often, and is very irregular in its action. It involves much local action, wastes its force, and soon eats itself up. This is also the case with that of Daniels, and every other diaphragm battery. Smee's battery is more economical than these, but it is inconvenient for separating the elements—shifting and changing the plates. The battery here represented, it is evident, obviates these evils, and its merits have been already appreciated by a number of our Telegraph Companies, who have laid aside their old Grove's, and are now using this one. It is intense, constant, economical, and convenient.

More information may be obtained respecting it of Mr. Chester, at No. 6, Wall street, or by letter addressed to him "box 2766," New York City Post Office.

IMPROVEMENT IN GALVANIC BATTERIES.

Fig. 1

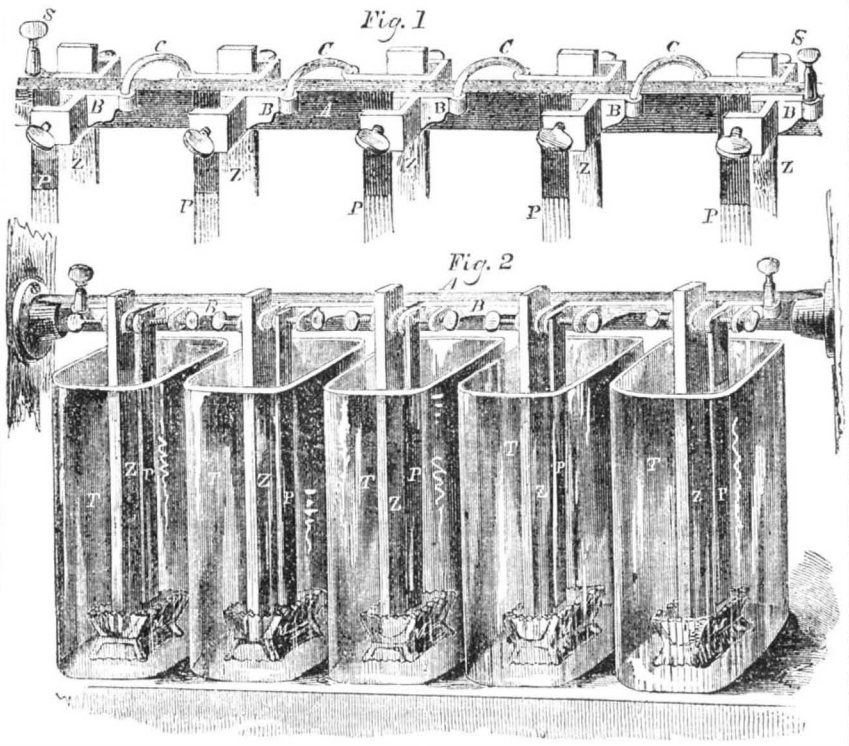


Fig. 2

IMPROVED VALVE FOR STEAM ENGINES.

Fig. 1

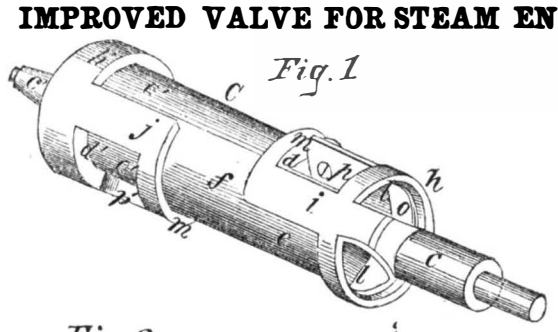


Fig. 2

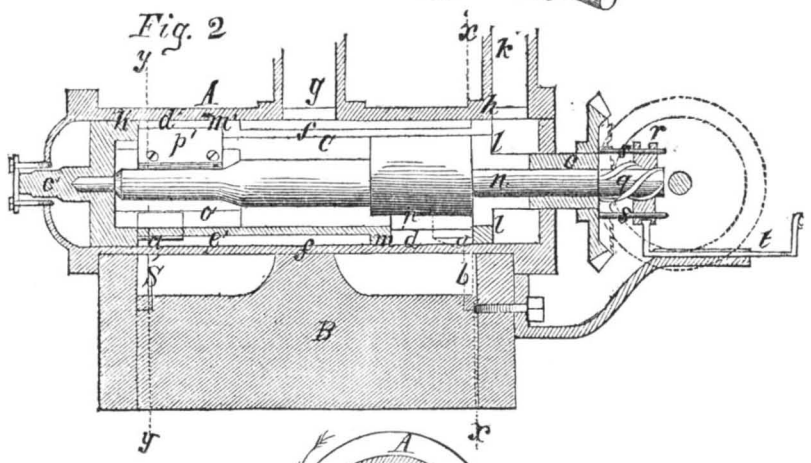
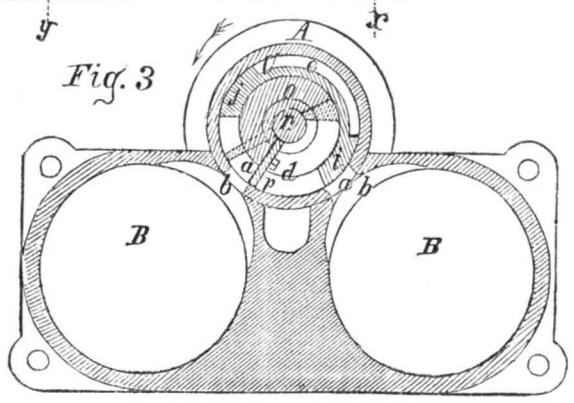


Fig. 3



The annexed engravings represent an improved induction and eduction valve for steam engines, for which a patent was granted to Thomas Goodrum, of Providence, R. I., on the 3rd of April last.

Figure 1 is a perspective view of the valve apart from its seat and casing; fig. 2 is a longitudinal section of the same applied to a double cylinder steam engine, and fig. 3 is a transverse section in the line, *x x*, figure 2. Similar letters refer to like parts.

This invention consists in a hollow cylindrical or conical valve of novel construction, which receives a rotary motion corresponding with that of the engine shaft, and may control the induction and eduction of steam to and from one, two or more cylinders. It also consists in an appliance to the said valve, to serve the purpose of a variable cut-off; and furthermore, it consists in a certain manner of arranging the said valve, whereby the steam passages leading from the valve to the cylinder or cylinders are shortened to the greatest possible degree.

A is the valve casing or seat, consisting of a tube of about the same length as the engine cylinder, which is bored out very slightly conical in order to grind the valve in tight and allow the wear to be compensated for. This casing is arranged parallel with the cylinders, B B, and bolted securely thereto, and has openings, *a a*, and *a a*, made in it at either end to match with the steam ports, *b b b b*, at the ends of the cylinders. C is the valve which is fitted steam tight to the casing, and is bored out from end to end cylindrically or slightly conical, and has journals, *c c'*, working through stuffing boxes in the closed ends of the casing, A. It is intended to have steam supplied constantly to its interior from the induction pipe, *k*, which enters the casing, A, at one end, and for that purpose openings, *l l*, are made in or near the end which is next the steam pipe. It has near the ends, but on opposite sides, two openings, *d d'*, in the interior, each extending nearly half around it, and being of such length as to cover the openings or ports, *a a*, in the casing. Opposite to the openings, *d d'*, are two cavities, *e e'*, which also extend nearly half way round the valve, corresponding exactly in that respect with the openings, *d d'*, and are united by a cavity, *f*, which extends all around the valve so as to communicate at all times with the eduction pipe, *g*, which is placed at or near the middle of the length of the casing. These openings and cavities in the valve only leave for its bearing surfaces the two rings, *h h'*, at or near the ends which bear outside the steam ports ; the divisions, *i i* and *j j*, between the steam openings, *d d'*, and their corresponding exhaust openings, and the guards, *m m'*, on the inner ends of the steam openings. The cut-off consists of a spindle, *n*, with journals fitted to turn in bearings within the journals of the valve, carrying two semi-cylindrical heads, *o o*, fitting to the interior of the valve opposite to the steam openings, *d d'*, the said heads carrying two plates, *p p*, which fit lengthwise to the openings, *d d'*, and which fit to the interior of the valve casing, B. The heads, *o o'*, and their plates, *p p*, are capable of contracting the openings, *d d'*, to any desired extent in a circular direction, by being turned to a suitable position within the valve, The turning of the cut-off is effected by means of an endless screw, *q*, of very quick pitch, on the end of the spindle, *n*, which projects through the journals of the valve, and a nut, *r*, which fits to the said screw, but is prevented turning by pins, *s s*, or their equivalents connected with the valve. By sliding this nut back or forth by means of a slider,

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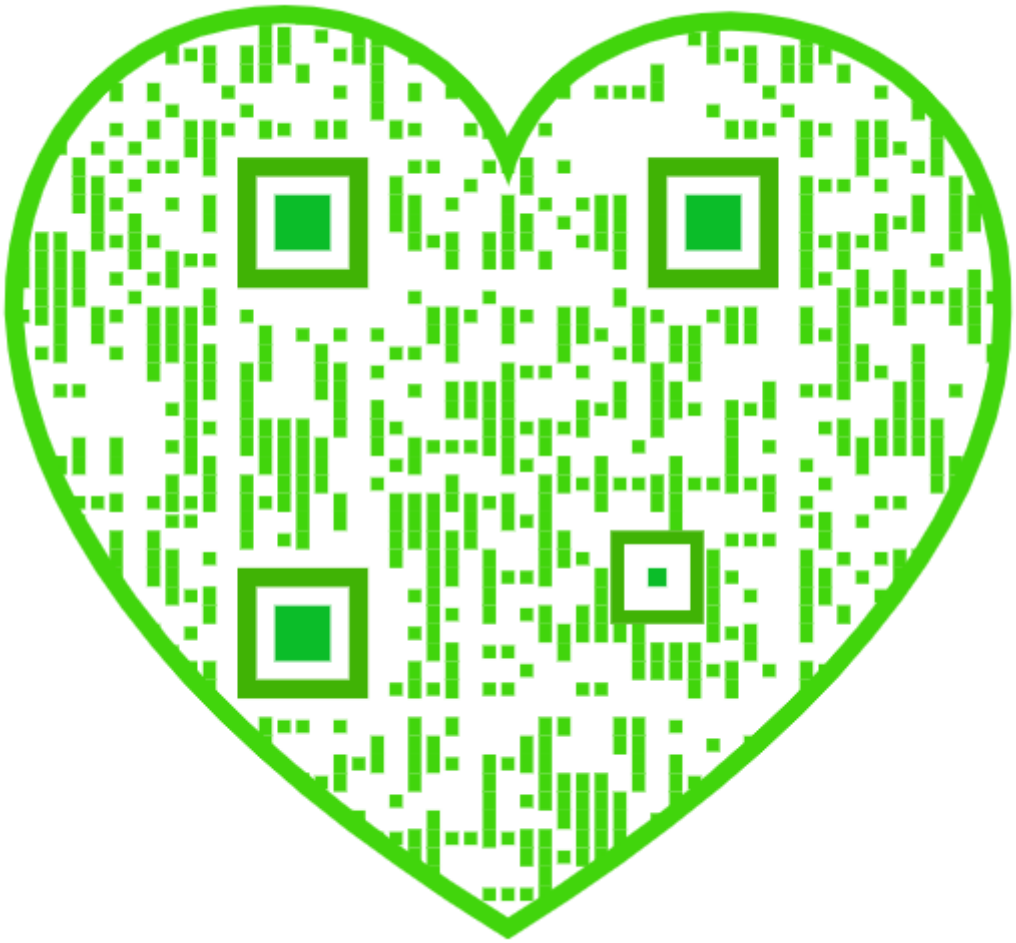
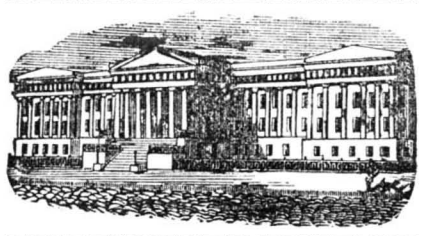


t, connected with it, the endless screw is caused to turn within the nut. A graduated scale upon the slider, *t*, will serve to adjust the cut-off of any point in the stroke.

The operation of the valve and cut-off will be best understood by reference to fig. 3, which shows its relation to the ports, *a a*, at one end of the casing. The cut-off is there supposed to be adjusted to cut off at about half stroke. The right hand engine is supposed to be just passing the center, the left hand one to be at half stroke. The valve makes one revolution in the direction of the arrows for every revolution of the engine shaft. The bearing, *i*, of the valve is just passing the port, *a*, of the right hand cylinder, and commencing to admit steam from the interior of the valve through the opening, while the bearing, *g*, is just opening the opposite port, *a*, of the same cylinder to the exhaust. The port, *a*, of the left hand cylinder, which has been receiving steam, is just being closed by the plate, *p*, while the opposite port, *a*, is full open to the exhaust cavity, *e'*. The ports, if properly proportioned, are opened wide for receiving steam, and exhausting very early in the stroke, and the exhaust remains wide open till near the end of the stroke. The cut-off may take place very early in the stroke, or steam be admitted during the full stroke by changing the position of the cut-off. The variation of the cut-off is illustrated by dotted lines in fig. 3, representing it set to cut off later than it does in the position represented in black. If this valve and cut off are applied to a single cylinder, no change of construction is required except that only one port will be required at each end of its casing. It will be readily understood that steam might be admitted to three, four, or even more cylinders by one valve, with the cylinders arranged all around it, the only change in its construction being the provision of a proper number of ports in the casing, A. The valve will work otherwise than parallel with the cylinders, but the arrangement in that way shortens the passages, and thus saves steam, and also makes the engine more compact than any other arrangement.

The inventor is confident that this improved valve is of especial importance for locomotives, and all fast running engines, saving a great deal of power to operate it in comparison with that which is required to work the cut-offs in common use.

More information may be obtained by letter addressed to him at Providence.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office,

FOR THE WEEK ENDING JUNE 19, 1855.

STONE SAWING MACHINES—Joseph Adams, of Fairhaven, Vt.: I claim the application to the saw frame hanging from cords so as to move of necessity in the arc of a circle of the counterbalancing weight which, at the same time, permits it to feed itself at all parts of its motion, substantially as described, and combined therewith, the guides constructed and operating as specified.

TWO-MOTION CONE VALVES—Horatio Allen, of New York City: I claim so constructing a cone valve, that in the operations of opening and closing the same, two motions shall be imparted to it, in or nearly in succession, and in directions at a right angle with each other, the first of said motions effecting the withdrawal of said valve out of contact with its seat, and retaining it so withdrawn, while the second motion shall be given, whereby it can, by that second motion, be turned without friction against the seat, as described, and this I claim, irrespective of the mechanism employed, as this may be considerably varied without changing the character of my invention, the whole being constructed and operating substantially as set forth.

CUTTING IRREGULAR FORMS—Avery Babbett, of Auburn, N. Y.: I claim the machine specified, for the purpose of producing angular irregular forms, substantially as set forth.

CORN PLANTERS—Uriah Beebe, of Oakland, Mich.: I claim the shafts, I, and supports, L, combined, arranged, and operated in the manner and for the purposes set forth.

RECIPROCATING RAILWAY PROPELLER—Henry Boynton, of Hinesburgh, Vt.: I disclaim as any part of my invention the working beam stopping apparatus as now used upon the Cornish engines, commonly called the bumper.

I claim, first, the double wheeled car truck, provided with wheels rotating in opposite directions on the same axis and running between upper and under simultaneous acting railways, constructed and applied substantially in the manner and for the purpose described, by which a longitudinal propeller for water craft is held or confined to its designed railways.

Second, I claim, in combination with two sets of railways—one for the forward and the other for the back stroke, the ascending and descending railways, so arranged that the ore wheels of the truck run upon one track, and the after wheels upon another track, whereby the truck is free to ascend and descend at either end of the main railways, in such a manner that a line drawn through its axles will be always parallel, or nearly so to the main horizontal rails, substantially in the manner and for the purpose described.

Third, I claim the lower rising vibrating rails and the upper pivot moving rails, constructed and applied substantially as set forth.

Fourth, the combination of levers in their adaptation to railway propellers, by which the upper pivot rails, at either end of the railways being moved by the truck wheels; those at the opposite end are similarly moved at the same time, and the addition of safety levers, by which if the pivot rails upon either side end are moved, all the others are similarly moved at the same time.

Fifth, the combination of levers by which the catch bars or fastenings to the upper pivot rails are governed, and disengaged, by the truck wheels, and by which, if either one is disengaged, the others are also.

At the same tim I claim the combination of the curved toe rocking shaft, with the oscillating riding bar, sustaining a weight or spring with any reciprocating arm attached to the engine, for the purpose of gradually, and rapidly retarding the piston, and bringing it and the car truck to a state of rest, as described.

RAILROAD CAR SEATS—J. H. Cocke, of Bremo, Va.: I do not claim a back capable of turning from one side of a seat to the other. Nor a back capable of being placed in an erect or inclined position.

But I claim a back possessing all these properties, constructed with a rigid arm, the guide pins of which turn in a curved slot provided with a catch, while the back hinges upon the support for its lower edge, substantially as set forth.

In combination with a reclining reversable back, I claim a concave seat, so that persons occupying the seat will not be liable to slide off, as they would if the seat were flat or convex.

REPLACING RAILROAD CARS UPON THE TRACK—S. Park Coon, of Milwaukie, Wis.: I claim the construction of a windlass, pulley, chain, or rope, and foot stocks, in such manner as to adapt and attach them to a section or length of railroad rail, substantially as set forth, to form an apparatus that can be used for replacing railroad cars upon the track, and when this duty is done, the parts of which can easily be separated for more convenient transportation, and packed in the tool box of the tender or other appropriate receptacle.

[The parts of the machinery embraced in this claim are very convenient, as stated, to be carried on every train of cars, and are therefore ready for every emergency of running off the track. It embraces a section adjustable track, to raise the run off locomotive or car upon it, and move it forward on the track by capstan and jacks. The apparatus is simple and efficient for the purpose.]

FISH HOOK—R. F. Cook, of Troy, Ala.: I claim the combination and arrangement of the steel strips, A A A A, having barbs, b, formed on their collar or plate, c, rod, B, spiral spring, C, ring, e, and bait hook, D, substantially as and for the purposes set forth.

[There are two spring barbs, one on each side of the shank of the hook, confined by a ring, which, when a fish bites on the bate hook, is drawn down, and the two barbs being relieved from the ring, strike into the jaws of the fish and fasten themselves with great force. This is a certain and sure catching sockdologer.]

PLOWS—L. G. Evans, of Springhill, Ala.: I claim connecting and arranging the mold board, d. land side, m, and coulter, c, in such a manner that they are together capable of a vertical and lateral adjustment in addition to the particular adjustment of the mold board, as described.

COAL SCREEN—J. P. Fennell, of Philadelphia, Pa.: I am aware that a rotating screen in a tight box with a single drawer which was used in common for the ashes and coal both has been used. This I do not claim.

But I claim a portable coal screen, composed of a tight box, within which are arranged a rotating screen, and two drawers, the openings into which box are provided with doors, so that the box shall remain tight when either or both the drawers are taken out, as described.

CUTTING THE INSIDE HOLD OF SHOVEL HANDLES—Geo. Fetter and J. L. Pennock, of Holmesburg, Pa.: We claim, first, cutting the inside hold of D-shaped handles for shovels, spades, etc., by means of a curved cutter, O, so operated as to pass one half way round one end of the hold, the cutter smoothing or rounding a portion of said hold equal to its width and then remaining stationary, while the handle is moved to force the remaining uncut portion of the hold past the cutter.

Second, we claim operating the cutter, O, by means of the cam, G, frame, H, geared sector, I, and half cylinder, M, to which the cutter is attached.

Also operating the carriage, P, to which the handle, V, is attached by means of the cam, T, and racks, R S. The above parts being arranged and operating conjointly as shown and described.

[These claims express very clearly the nature of the invention. It will be understood that the shovel handle to be operated is clamped on a carriage, which feeds it to the action of the curved cutter, the frame of which is operated by a cam, G, as is the feed frame of cam, T, to change the positions of the handle and cutter, to effect the objects described in a rapid and superior manner. The improvement is certainly a good one.]

SPRINGS FOR HINGES, &c.—Arasmus French, of Waterbury, Conn.: I do not limit myself to the form or application specified, so long as the same mode of operation is attained by the substitution of mere equivalents.

But I claim the method substantially as specified, of composing a spring of a series of elastic rods connected at each end to plates, or their equivalents, and at or nearly at equal distances from the center of the plates, and surrounded at or nearly at the middle of their length by a collar or ring, so that they shall be held nearer together at the middle than at the ends, substantially as specified.

SCAFFOLDS—A. C. Funston, of West Philadelphia, Pa.: I claim making the back upright of one or all of the sections or frames forming this particular scaffold in two parts, and providing the lower part with a slot, and uniting it to the upper part by a set screw, which plays in the slot and allows of the lower part being raised, substantially as and for the purpose set forth.

[This improvement is designed to facilitate the raising and lowering of masons' scaffolds, and making them adjustable with facility, to suit circumstances. The scaffold is made in section frames, with adjustable metal braces, to expand or contract the size of the scaffold. By the use of screws working on rods which move in slots in the frame, the scaffold is raised or lowered by simply turning the screws, as stated. This scaffold is certainly far more convenient and adaptable than those in common use, and it should meet with favor.]

EXPANDING BLOCK FOR HORSE COLLARS—R. R. Gray, of Crawfordsville, Ind.: I do not claim any device in the machine separately and alone considered.

But I claim the arrangement of the two sets of jaws, B B C C, by which the inner jaws, C C, alone are actuated directly to the screw, c, while the outer, B B, are actuated by the expansion of the inner, C C, and the pressure of the springs, H H, both jaws being guided by the slots, D D E E, in the manner and for the purposes set forth and described.

STUMP MACHINE.—Stephen Gorton and Francis Morris, of Crawfordsville, Pa.: We claim the construction of our machine after the manner described, to wit, with a main shaft and wheels, as described with the larger wheel, B, fastened on to the shaft and the lesser wheel, C, constructed so as to turn on the shaft, or any other construction substantially the same.

MODE OF HANGING BELLS—G. W. Hildreth, of Lockport, N. Y.: I claim the round tapering shank, b, and corresponding hole in the yoke, a, in combination with the bolt, c, and cap, d, to secure the bell firm into the yoke.

Second, I claim the doweling of the cap, d, to the yoke, a, also the manner of securing the bolt, c, from turning in the cap, d, for the purpose set forth.

DOORS—O. C. Hill, of Malone, N. Y.: I claim inserting springs and strips into grooves in the beveled top, bottom, or outer edge of a door when the said door is made to fit into a casing which is correspondly beveled, by which the joints of the door are made wind and water proof, substantially as set forth.

PIANOFORTE ACTION—R. M Kerrison, of Philadelphia, Pa.: I claim solely the means I employ to check and hold the hammer after the blow.

I claim as part of those means the impeller made of the form described, substantially in the manner and for the uses set forth

I also claim the hammer butt of the form described, suitable and proper to receive the action or pressure of two parts or branches of the impeller at two different points, in the manner and for the purpose substantially as set forth.

I claim the impeller and the hammer butt, as described, or their equivalents, and acting conjointly in the manner substantially as set forth.

I claim them conjointly as a means of checking and holding the hammer after a blow.

HOT AIR FURNACE—J. L. Kite, of Philadelphia, Pa.: I am well aware that spiral flues and air passages have been commonly used in connection with hot air furnaces, which however, have generally been made hitherto in the shape of pipes, or by means of loose scraps introduced into the flues and passages. Therefore I do not claim exclusively the use of spiral passages for hot air furnaces.

But I claim the combination of castings, B and D, with their vanes and with the outside casing, A, constructed and operating in the manner shown, for obtaining a great amount of heating surface at the expense of a small quantity of fuel.

TAKING STEREOSCOPIC PHOTOGRAPHS—J. H. Marston, of Philadelphia, Pa.: I do not claim the using of guides or frames or angles on a camera board, as such have been used before.

But I claim the particular arrangement of two frames or guides or boards that shall work on and be fastened or pivoted on the camera board, A, at the center and front of the camera board, A, at a a', the frames or guides to be at right angles, so that when closed together they form the raised ledge, b b', parallel with each other, by which to adjust and center the angle board, A, previous to setting the angles for stereoscoping.

Also the application of the spring, c, to hold the frames together, the right and left screws, e e', and nuts, d d', and eye plates, f f', to force apart, and hold the frames, B B', in any desired angle.

I claim the described apparatus for moving the camera box and giving the true sterescopic angle at one and the same time.

[These claims embrace an improvement in the camera board, which allows of the camera box being adjusted more expeditiously and correctly, for taking stereoscopic pictures than can be done in the common way. They also embrace an improvement in the camera box by the use of the devices named in the second claim for expediting the process and taking two pictures easily on the same plate,—a good improvements.]

FASTENINGS FOR CARPETS—Felix Miller, of New York City: I claim the method of laying and securing carpets down upon floors by means and use of the claw hook, substantially as described, operating and combining with the carpets and eyelet on the floor, substantially in the manner and for the purposes set forth.

CUTTING LEATHER INTO STRIPS FOR BOOT AND SHOE SOLES AND HEELS—J. P. Molliere, of Lyons, France. Patented in France July 22, 1853: I claim the cutting up of the sides of leather into sole and heel strips of any required breadth, by means of the self-arresting carved knife blade, o, driven alternately to the right and to the left by the Vaucanson chain. H, while the leather is held in its place against the adjustable pins, 3, by the spring ruler, M, the whole constructed and operated substantially as described.

SECURING CUTTERS TO ROTARY DISKS—Jonah Newton, of New York City: I claim securing the cutters, a, to the disk or plate, A, as shown and described, viz., having the cutters of semicircular form with ledges or projections, d, on their back or convex sides, the ledges or projections being fitted in grooves, c, in the semicircular edges of the projections, b, of the plate, A, the front or concave sides of the cutters having grooves, e, in them to receive the nuts or segment heads, f. The projections, b, cutters, a, and nuts or heads, f, having screws, h, passing through them, for the purpose of allowing the cutters to be adjusted properly, and also securing firmly the cutters to the disk or plate.

[The mode of securing the cutters embraced in this claim, prevents them from becoming loose by lateral motion, the ledges on their backs fitting in the grooves, c, accomplish this difficult object. As the cutters are worn down in consequence of being often sharpened, they can be moved further out, by relaxing the screw, h, so as to have their cutting edges always in correct line, to act upon the timber at the proper angle.]

CUTTING LOCKS AND TAPERING ENDS OF WOODEN HOOPS—Royal Parce, of Pitcher, N. Y.: I do not claim the use of gauges for obtaining the length of hoops between the locks, but only as used in connection with my machine, but not being aware that there is in use any device or machine for cutting locks, other than the edge, saw, or knife.

I claim the whole combination, as described, and especially the principle of cutting locks in wooden hoops by means of knives or other cutting apparatus, having substantially the form of the lock required to be made, and cutting both transversely and longitudinally by the same movement, no matter in what other combination found.

ICE HOUSE—W. D. Parker, of New York City: I do not claim making an ice house with double sides, and packing a non conducting substance between the sides, for that is well known.

But I claim the construction of the ice house, as shown and described, viz., having the ice house formed with double sides, a a, and double roof, c, with a suitable non conducting substance packed between them, the house being provided with a slotted floor, g, having an ice chamber underneath it, and also provided with a double inclined floor, i i, at its upper part, underneath which a screw, j, is secured, on which charcoal and other absorbents, k, are placed.

A flooring, l, being placed on the flooring, i i, and having holes or traps, n, provided with doors, n', made through it, and also through the flooring, i i, and screen, j, the flooring also containing ice, substantially as described and for the purpose set forth.

[The object of this improvement is the construction of a perfect ice house for the preservation of fruit, &c. For this purpose the atmosphere must be of a low but uniform temperature, with a dry atmosphere, so as to prevent incipient decomposition or fermentation, and also to absorb impure gases, if through inadvertence, any injured fruit, etc., may be placed in it. These objects are accomplished by the construction of this ice house, and the absorbents placed in it We have seen and partaken of fruit preserved in one of them during a whole year, and it looked as fresh, and tasted as delicious as if just plucked from the tree.]

WOODEN WARE—David Pierce, of Woodstock, Vt.: I claim, first, the application and use of a cutter or cutters in gangs attached to a sliding rest, as described, or their equivalents.

Second, the apparatus for forming and finishing circular or elliptical heads or bottoms, as described, or its equivalent.

Third, the apparatus for turning out the inside of the cylinders and cutting the croze, as described.

FAN BLOWER—David and J. R. Pollock, of Lancaster, Pa.: First, though we do not of itself claim the employment of a hollow shaft, we claim making the shaft hollow with open ends and with apertures, g g, in the sides within the blower casing, as set forth, for the purpose of inducing a current of air through the shaft to keep it cool, and at the same time to increase the supply to the fan.

Second, we claim making the pulley, F, which receives the driving belt, hollow with closed ends and a perforated face and providing openings from its interior into the shaft, as set forth, for the purpose of causing the displacement of the air between the belt and the face of the pulley and at the same time increasing the supply to the fan.

[The wings of this blower are so made as to be adjusted at different angles. The objects of the improvements are clearly stated, and their advantages pointed out. They are good, and commend themselves to the attention of all those who make and use blowers.]

SOCKET HANDLES FOR CHISELS—L. T. Richardson, of Worcester, Mass.: I do not claim a die of any particular form. Neither do I claim simply forming or constructing sockets by means of a die, for dies are used for analogous purposes.

But I claim constructing the sockets, A, with a die so formed that a transverse partition or ledge, a, is left within the socket, said partition or ledge dividing the recess, b, which receives the handle of the implement from the recess, c, which receives the shank, so as to obtain a sufficient body or weight of metal at that part of the socket which is welded to the shank, d, of the tool or implement, for the purpose of forming a strong and durable connection of the socket and shank, as set forth.

[The ordinary mode of constructing such socket handles for the cheaper kind of such tools, is to forge the socket of sheet metal, welding the joint, and then inserting the shank within the smaller end and welding it to the socket. This forms a very imperfect connection, because the shank has a very small bearing within the socket, and because there is not a sufficient weight or body of metal at the small end of the socket, to be incorporated with the shank. This explanation will render clear the value of the improvement embraced in this claim.]

PRODUCING INTERMITTENT ACCELERATION OF MOTION IN HARVESTER RAKES, &C—John Richardson, of Buckeystown, Md.: I am aware that an accelerated motion has been given to grain rakes on harvesting machines, this I do not claim.

But I claim a device for producing an accelerated motion whether in rakes or for other purposes, said device consisting of the cam, a, on the drum, H, and the ratch and pawl, I b, and friction wheel, V, arranged and operating substantially as set forth.

GRAIN CLEANERS—H. D. Reynolds, of Pendleton, Ind.: I do not claim the devices described, separately considered.

But I claim the openings, q, in combination with the conductor, r, and scouring cylinder, 3, arranged substantially as described for the purpose specified.

CHUCK FOR TURNING ECCENTRICS—Jno. W. Russell, of Springfield, Mass.: I claim the application of a chuck to irregular objects and points eccentric from the center, using for that purpose the jaws, C C, and the screw, E, in combination with the nuts or collars, D D, in all for the purposes substantially as set forth.

SEED DRILLS—James Selby, of Lancaster, Ohio; I claim distributing the seed by means of the transverse slides, f, in combination with the reciprocating slides, E, operated by means of an adjustable crank formed by the sliding bar, j, as shown and described.

[The slides, f, in the claim regulate the quantity of seed discharged; this is effected by their position under the apertures through which the seed passes down. The method of distributing the seed by the devices claimed, is simple, and is believed to be a good improvement over other modes in use, to obtain the same results.]

MOVING STEREOSCOPIC PICTURES—A. S. Southworth & J. J. Hawes, of Boston, Mass: We claim giving to the pictures of a stereoscope or other analgous instrument a panoramic motion into and out of the fields of vision, by means of mechanism substantially as described, or by any other equivalent means.

ROTARY ENGINES—Sylvester Stevens, of Boston, Mass.: I claim the revolving disk, D, with its valves, b b', operating in the manner substantially as set forth.

SELF-ACTING BRAKE FOR VEHICLES—Peter Ten Eyck, of New York City: I do not claim a brake formed by placing shoes between the wheels and the surface of the ground, irrespective of the peculiar arrangement or connection shown between the shoes and the draught pole or shafts, for they have been previously used for railroad brakes.

But I claim the employment of the shoes, F F, attached to the neck axle of the vehicle by the jointed arms or levers, B D, where said shoes are connected to a sliding draft pole, G, by rods, g g, and chain, h, said pole, G, having a spring, K, attached to it.

The above parts being arranged substantially as shown and for the purposes as set forth.

[The shoes of this brake are self-acting; they drop by their own gravity when the speed of the team is checked, and move into place to wedge and bind between the peripheries of the back wheels of the wagon and the ground, and thus stop the vehicle. It will be understood that the brake is especially adapted for wagons and carriages in hilly regions.]

SELF-OPERATING CIRCULAR GATE—Wm. Thompson, of Nashville, Tenn.: I am aware that many modifications of the described gates may be made, I therefore do not confine myself to the precise form shown.

I claim constructing the gate, B, of circular form, and having said gate rest upon a vibrating rail, C, which is connected to a platform, D, or arranged in any proper way, so that said rail may be inclined either by the weight of the person, vehicle, or animal, which is to pass through it, or by any other device, and cause the gate to roll down the depressed end of the rail, and consequently leave a free or open space between the posts, said gate closing or returning to its original position between the posts, when the rail is relieved of the weight or pressure which first actuated it.

[This gate is of the form of a wheel and rests on a vibrating rail, so that whetever side this rail is inclined, the gate will roll—to right or left—and thus it is opened and closed. By treading on a platform in approaching the gate, the gate is made to roll to the one side and open, and when a person has passed through and off the platform, a balance weight tilts the vibrating bar, so as to make the gate roll into position and thus be closed. The invention is a peculiar one.]

BRICK—Levi Till, of Sandusky, Ohio: I claim the making of bricks with channels or grooves, and with spurs or conical projections for the purposes and substantially in the manner set forth.

STEAM BOILERS—Chas. F. Thomas, of Taunton, Mass.: I claim the improvement of extending the tube sheet, o, smoke tubes, P P, and boiler, M, or its enclosing sheet, R, into the fire place, I, and over the fire grate, K, as described, in order not only that the part so extended may serve as a beam or strut to support the crown sheet against the superincumbent pressure of the steam, but that the flame and gases from the fire may not only pass against the tube sheet and enclosing sheet, R, of the extended part of the boiler, but also through the extended parts of the tubes within such projected part of the boiler, as specified, the same serving to greatly increase the extent of heating surface exposed to the fire.

HOSE COUPLINGS.—A. M. Waterhouse, of New York City: I do not claim the pipe as represented in figure 1, with two or more projections or ears; but I do claim the slotted nut with the female screw on its inner surface.

I claim the pipe represented in figure 3, with straight or vertical slots (one or more) and with a screw on its outer surface.

I also claim the combination of these parts as described, or their equivalents, each with the other, and altogether and all other combinations substantially the same.

JOINTS FOR STOVE PIPES—Alva Worden, of Ypsilanti, Mich.: I claim the inclined tapering semi circular grooves, constructed in the manner and for the purpose specified, all of which are fully demonstrated.

JOINTZ OF PIPES FOR ARTESIAN WELLS.—Jesse Norris Bolles, of Philadelphia, Pa., (assignee to H. J. Ockerhausen, of Baltimore, Md.): I claim the mode of rendering cylinders or tubes flush, or upon a line on their exterior surfaces for Artesian wells, or for other purposes as described, or any other mode substantially the same which will produce the same effect.

MILL DRESS.—George L. Dulaney, of Mount Jackson, Va., (assignee to Reuben Allen, of Shenandoagh Co., Va.) I claim the construction of what I call a compound elbow, mill dressed, by the divisional mode of calculation described, having main elbow leads, gutters or groves, formed with secondary or branch elbow leads or conveys, communicating directly therewith, instead of being a distinct or separated series. The said compound elbow dress being formed upon the face of a mill stone, having an inward sloping or depressed surface, together with an outward sloping feed or supply circle, specifically as described and for the purpose set forth.

THE MANUFACTURE OF ARTIFICIAL STONE.—Thomas Hodgson, of Brooklyn, N. Y., (assigner to Robert L. Wright, of New York City.) Patented in England, May 9, 1854: I do not claim the admixture of blood with sand or other earthy or mineral matter, except in the manner and for the purpose herein specified, as I am aware that such mixtures have been used for mortar, cement, stucco, &c.

But I claim the composition formed by the admixture of sand or pulverized stone, plaster of Paris, and beast's blood, when these ingredients are mixed in the manner, and in about, (without limiting myself precisely to) the proportions herein set forth, to be molded or cast while in a plastic state, substantially as herein described into blocks, architectural ornaments or devices, statuary, or ornamental or other

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forms or figures, and in such conditions used as a substitute for stone, for building, architectural or other ornamental purposes.

[See some accounts of this invention in another column.]

MACHINES FOR BORING CYLINDERS.—Marvin S. Otis, (assignee to Charles Rumley,) of Rochester, N. Y.: I claim the arrangement of the parts substantially, as described, so as to produce an alternating transverse motion of cylinder in combination with a rotating movement of the cutter, or viceversa, substantially as set forth.

MAKING NUTS.—Isaac H. Steer, of Winchester, Va. (assignee to Henry Carter of Pittsburgh, Pa.) Ante-Dated December 19 1854: I claim, first, making a nut at a single operation, from a heated bar or plate of metal, by cutting off the blank from the bar, punching a hole or eye through it, and swaging it into shape, substantially as set forth.

Second, punching the eye of the nut, in a die or press-box by which it is surrounded and firmly supported, and thus prevented from straining or bursting during the operation, substantially as set forth.

Third, shaping nuts by subjecting them while hot to powerful and sudden compression on the punch, and in the punching described substantially as set forth, whereby they are finished with such a degree of smoothness, regularity and precision, that in the condition in which they come from the machine, they are fit to use in the construction of most kinds of machinery, and are at the same time sounder and stronger than unpressed nuts, made by machinery.

RE-ISSUE.

NUT AND WASHER MACHINE.—Henry Carter and James Rees, of Pittsburgh, Pa. Original Patent dated August 26, 1851: We are aware that Isaac H Steer about the year 1840, proposed to make nuts by the process we have here described: but never completed a machine which would do this automatically, therefore we do not claim this process in itself and irrespective of machinery, but, being the first to construct a machine capable of making nuts by this process, without any other manipulation than is required for feeding in the bar iron.

We claim the machine substantially as described, for making nuts, by cutting the blank from a heated bar of iron, punching its eye in a closed die-box, pressing it into shape while in the die-box and on the punch, and then discharging it as specified.

[FOURTEEN of the patents in the above list were secured through this office.

(For the Scientific American.)

Variation of the Magnetic Needle.

A few days ago, I had the pleasure of a glance at one of the volumes of Bache's Report of the United States Coast Survey, and thought a few remarks might not be uninteresting to many of your readers. The following table will show the variation of the needle at several points:—

Cape Flattery, Washington Territory, variation	20½ East
Santa Barbara, Cal.	13½
San Luis Pass, Texas	9
Galveston,	8¾
Ship Island Shoal, La.	8
Pascagonla River. Miss.	7½
St. George's, Tuna, Florida	5¾
St, John's Harbor "	3¾
North Edisto River	3
Cape Roman Shoals, S. C.,	3
Cape Fear River, N. C.,	½
Pungoteague Creek, Va.,	2½ West
New York Bay	6
Nantucket,	9½
Alden's Rock, Portland, Me.	10½

From this it appears that there is 30¾ degrees difference in the variation, between the most western and eastern points of the U. S. The line of variation passes through the State of North Carolina. Can any one tell where it passes through the States north of that? I have heard it said that it passes near Pittsburg.

The magnetic pole, as marked on Mitchell's Atlas, is on the 70th parallel of north latitude; and on the 10th meridian of longitude, west from Washington. Is there more than one magnetic pole? Is the magnetic pole stationary or movable? Is the line of no variation straight or crooked—and where located? It is said that the variation of the needle changes from east to west, in a given number of years. Is this so—and if so, how accounted for?

An answer to the questions propounded above, would be very interesting to surveyors in general. The law of Pennsylvania, which has been in operation for the last three years, requires surveyors to adjust their compasses to an established meredian, to be established at or near the county seat of each county, and entered in a book, kept for that purpose, the variation of the needle from said meridian. At some future time, I will give you the result of the entries made for the last three years. Suffice it to say, at present, that the variation is on the increase westward. GEORGE P. DAVIS.

Kennett's Square, Pa., June 18, 1855.

Venus, one of the brightest of the planets, is now visible with the naked eye in the day time, and for two or three months to come it will be increasing in brilliancy, and may be seen every afternoon.

The waters of Lake Erie are continually rising. They are now three feet higher than they were four years ago.

European Inventions, Discoveries, &c.

NEW COMPOUND OF GOLD AND MERCURY.—When gold is treated with mercury in large excess, a definite compound is formed, which remains dissolved in the mercury, from which, however, it often separates in a crystalline form, and from which it may be almost entirely separated by mechanical means, such as pressure through chamois leather. This solid amalgam crystallizes in four-sided prisms, and contains six parts of gold to one of mercury, and fuses on elevating the temperature (Gmelin, vol. iii.) The mercury, however, which has passed through the chamois-leather, always contains gold, in proportion varying from a minute trace to 10 grs. in the pound. In the metallurgical processes for extracting gold, it becomes important to estimate the amount of gold remaining in the fluid part of the mercury, and it was during some experiments made with the view of ascertaining the best method of doing so that this new amalgam was discovered.

This substance is best obtained by dissolving gold in mercury in the proportion of 1 part of gold to 1000 of mercury, about 7 grs. to the pound avoirdupois, squeezing the solution through chamois-leather, and dissolving the mercury in dilute nitric acid with gentle heat. The compound is left in the form of four-sided prisms, of the most brilliant metallic luster, which may be boiled in nitric acid without decomposition, and exposed to the atmosphere for months without becoming tarnished. On exposure to heat they do not fuse, but afford a sublimate of metallic mercury, amounting in my experiments to rather less than 12 per cent.; the form of the crystals remained unaltered, their luster was little affected, and the residue consisted of pure gold. This would correspond to a compound of four atoms of gold to one of mercury:—

Au	197 × 4 =	788	or 88 74
Hg	100	100 "	11 26
Total		888	100.00

[By T. H. Henry, F. R. S., in the London *Mining Journal.*]

IMPROVED TUYERE FOR SMITH'S HEARTHS.—A paper was recently read before the Birmingham Institution of Mechanical Engineers (England,) on improvements in Tuyeres, by John Fernie, which clearly demonstrated the advantages of a large water space around the tuyere to prevent their burning out.—Mr. Fernie having observed the defects in the common water tuyeres, which in large fires were sometimes burnt out in a day, found that, from the smallness of the water space, steam was formed at the end, which drove the water back into the cistern, and it struck him, as an improvement, to make the space sufficiently large to allow a free circulation of the fluid, and thus prevent the formation of steam. The entire annular space round the nozzle of the blast pipe, instead of being supplied with water from a tube only, is placed in communication with a large body of fluid by opening direct into the water cistern, which insures in all cases a good supply of water, and as that portion nearest the fire gets hot, it circulates, and prevents the metal getting too high a temperature. The first one on this principle was put to work in 1846, and proved eminently successful; it was a single casting, with the inner pipe for the blast, carried straight through to the back of the water reservoir. A modification was suggested by a brother to the author of the paper, in which the tuyere was cast in two pieces—the one nearest the heat being fixed on by a conical joint with bolts and nuts, which can thus be removed when burnt out, and a new one supplied. In the Brittannia Carriage and Wagon Works, near Birmingham, 35 of these tuyeres are in use, most of which have been four or five months in wear, and have proved so satisfactory, that 35 more fires have been fitted with them. At the Brittannia Foundry, Derby, they had been in constant use, and not one had required renewal; there is no disadvantage of making them of cast-iron.

ELECTRICITY—CONDUCTION.—The following is the substance of a lecture, recently delivered by Prof. Faraday, before the Royal Society, on a disputed question of electrical conduction:—

"The point in dispute is, whether electricity can be transmitted through fluid bodies without decomposing them. In explaining and illustrating the subject, Prof. Faraday introduced a number of experiments, to show the relative powers of different substances of conducting frictional and voltaic electricity. The conduction of frictional electricity by wires, by the hand, and by a solid piece of niter, when applied to a charged electrometer, are supposed to be produced without any chemical action, and is called "conduction proper;" but when liquids are the media through which electricity is conducted, decomposition takes place, and many experiments seem to confirm the opinion, which by some electricians is considered an established law, the amount of decomposition has a definite relation to the quantity of electricity transmitted. Faraday's researches have established the fact, that when an electric current is passing through a fluid and decomposing it, the process of decomposition takes place instantaneously in each particle of the fluid that serves to conduct the electricity, and that a train of decompositions and recompositions is thus set in action. Whether any portion of electricity passes by "conduction proper" beyond that which thus decomposes the fluid, is the question that remains to be determined, and on which Prof. Faraday expressed himself still doubtful, though it might be gathered from his observations that his opinion leans towards the hypothesis of partial "conduction proper" through fluids. To give an idea of the vast quantities of electricity that are excited by chemical action, and the difficulty of estimating the amount transmitted, he kept a galvanometer deflected for a few moments by the excitement of electricity in a small pair of platinum and zinc plates applied to his tongue, and observed that in that short space of time a greater quantity of electricity had been called into action by those small plates than is contained in several thunder-storms. From this it might be inferred that a quantity of voltaic electricity, inappreciable by the instruments employed in ordinary experiments, might be conducted unobserved without decomposing action, which quantity, however, if it had been in the state of intensity of frictional electricity, would exhibit powerful effects.

Professor Faraday noticed the experiments of electricians on the Continent, which appeared to confirm the notion, that even frictional electricity cannot be conducted through water without decomposing it, and in opposition to that hypothesis, he exhibited others, which he said it is difficult to explain, except on the supposition that water conducts directly, in the same manner as solid conductors. Two wet muslin bags, blown out, to resemble in effect two large soap bubbles, were held in the electric field, between the electrical machine and a conductor connected with the earth, without being so near as to receive any charge. When removed together, and applied to the electrometer, there was no indication of electricity; but when one bag was separated from the other whilst under the influence of electrical induction, they then exhibited electrical conditions, one being negative and the other positive, in the same manner as two metallic balls would. The evaporation of spirits of wine without decomposition, by the heat of two immersed conducting plates from a voltaic battery, was also noticed, as evidence of "conduction proper" by a fluid. Prof. Faraday, in conclusion, expressed his ignorance of the nature of the mysterous power of electricity, and said, with respect to the special action of the force he had that evening noticed, his mind "is still in doubt."

Southern Copper Ore.

There are very rich mines of copper in Tennessee and Georgia. No less than 9,558,958 lbs. of it were carried over the Central Georgia Railroad last year, and exported from Savannah to England.

Report on Steam Boilers—Scales.

David Embree, Esq., Supervising Inspector, under the new steamboat law, for the district of St. Louis, has presented a report to the Secretary of the Treasury, on the subject of steam boilers. It embraces an account of experiments made for preventing the scale forming in steam boilers, and for testing the strength of iron of the exploded boiler of the steamers *Kate Kearney* and *Timour No.* 2.

The following are selections from the report, relating to the scales or incrustations in boilers, and next week, we will present the part of the report relating to the strength of steam boiler iron, which is very interesting and instructive:—

"By experience many years ago, I found that vegetable acids and vegetable alkalies would destroy and prevent such scales, when formed from the waters of the Ohio, they being principally composed of carbonate of lime; but from tests lately made, of the low water scales or coating, of the waters of the Missouri, they were found to contain from 46 to 48 per cent. of sulphate of lime; the appearance is different from those of the Ohio, and they adhere to iron like paint to wood. My first attempt was to ascertain what kind of acid would dissolve this deposit, and at the same time what effect such acid would have upon copper and iron. The following is the result:—

The Results of tests of Missouri lime scales. at the request of the Supervising Inspector.—A mixture of 1-2 oz. of muriatic acid, and 1 oz. of water, 1-2 oz. scales, 62 grs. copper, 32 grs. iron—dissolved one half of the scales, and had no effect on the copper or iron.

A mixture of 1 2 oz. sulphuric acid and 1 oz. of water, 1-4 oz. (1-4 oz, is equal to 112 grs.) scales, 90 grs. copper, 28 grs. iron—dissolved 10 grs. of scales, had no effect on the copper, dissolved 4 grs. of the iron.

A mixture of 1-2 oz. nitric acid and 1 oz. of water, 1-2 oz. scales, 90 grs. of copper, 32 grs. of iron—dissolved all of the scales, dissolved 8 grs. of copper and 9 grs. of iron.

A mixture of 1-2 oz. acetic acid and 1 oz. of water, 1-4 oz. of scales, 70 grs. copper, 30 grs. iron—dissolved 32 grs. of the scales, without any effect on the copper or iron.

J. J. T. COLMAN.

St. Louis, March 14, 1855.

The most promising of these was the muriatic acid; taking into consideration amongst other things, the cost of the article.

In these experiments the materials were cold. I afterwards repeated them with the muriatic acid, and found when cold one or two per cent. of the iron dissolved; but when gradually heated in a sand bath, to nearly the boiling point of water, the result was from 14 to 36 per cent. of iron dissolved, with but little effect on the scales of deposit.

I afterwards used muriatic acid, one part, and water, two parts, cold, on a flue of the steamer *Elvira*, and in short time dissolved the lime or coating; the rust or dark coating also came off, leaving the iron bright and apparently uninjured.

To the iron thus cleaned I applied "Sibbard's anti corrosive metalic compound."

On the first trip of the boat (having been out one week) there did not appear to be any deposit on this compound. On the second trip there appeared a thin skin of lime; afterwards it accumulated as fast as on any other part of the boiler; it however, separated from the iron by the use of a sharp instrument, more readily than it did in other places."

Coal of the Ohio Valley.

We learn by the *Railroad Record*, Cincinnati, that about 60,000,000 bushels of bituminous coal are raised and consumed in the Ohio Valley. The coal field of the Ohio Valley is the largest in the world; the coal surface amounting to 99,000 square miles. That of Great Britain only amounts to 12,000, and from it no less than 925,000,000 bushels are raised every year. It is the source of England's great wealth; without it her manufactures would be very insignificant. The Ohio Valley must be the great iron shop of the world some of these days.

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New Inventions.

Bi-Sulphuret of Carbon as a Motive Agent.

There has been on exhibition in this. city for some time, a small engine using the bi-sulphuret of carbon, as a motive agent, and it is also fitted up to use steam, so as to show the difference between the two agents, that is, their economy in fuel. We have witnessed two experiments; one with the bi-sulphuret of carbon, and the other with steam; but although we had intended to test the relative differences of these two agents by other experiments, we have not found time to do so.—We will, therefore, present the results of the experiments we have already witnessed, because they are of great importance:

The engine is a small one, similar in every respect to a common steam engine, with an outside condenser. The first experiment was with steam, and 7 ounces of alcohol for fuel. At twelve pounds pressure, the engine made 1285 revolutions, with a friction brake on, and the weight placed four inches from the fulcrum. With bi-sulphuret of carbon, the engine made 1652 revolutions with the quantity of alcohol, as fuel-pressure 35 lbs. and the weight placed on the brake at 12 inches from the fulcrum, thus exerting over three times the power with the same quantity of fuel. We should like to have witnessed the steam tested at higher pressures, but we have been assured, that the same relative differences have always been exhibited at all pressures. The economy of this substance as a new motive agent, has been demonstrated, thus far; of this there can be no doubt; and it seems to place a negative upon the general accepted statement of chemists, "all vapors contain a like amount of latent heat."

The bi-sulphuret of carbon is made by raising charcoal to a red heat in a retort, and then introducing small pieces of sulphur.—The vapor that passes off, is condensed into a liquid, by being passed through a worm immersed in cold water. This liquid is sensitive to heat, and easily condensed with cold. It cannot dissolve in water, and it is therefore well adapted for a motive agent by condensing it under water in a covered condenser. It is a combustible compound, igniting with a brilliant flash of flame, but without a violent explosion. We hope to see this substance applied on a large scale, and this can be done with any steam engine that uses an outside condenser. Our engineers should give it a candid consideration. The inventor is Bernard Hughes, an ingenious mechanic of Rochester, N. Y., who has applied this motive agent successfully for more than a year, and from his experience, he has perfect confidence in its superior economy.

A New Propeller.

There is now to be seen at the office of the Royal North American Steam Mail Co.—E. Cunard's—at the Bowling Green, models of the new propeller for steamships, for which an American patent was granted to Chas. de Bergue, of London, on the 9th of last January. We have had the pleasure of examining the application of the propeller, on a small scale, at the above-named place, which impressed us favorably with its simplicity, compactness, and originality. We were acquainted with the invention previously, but had not seen a working model in operation before. The propeller somewhat resembles a rocking arm or blade, working in a chamber open at each extremity, one on each side of the vessel, as a substitute for and in the place of the common paddle wheel. It is connected by a rod to a crank on the extremity of the main shaft of the engine, and it thus receives a vibrating treading motion, the action being somewhat like that of a fish's tail: it is all under water except the crank, and part of the connecting rod.

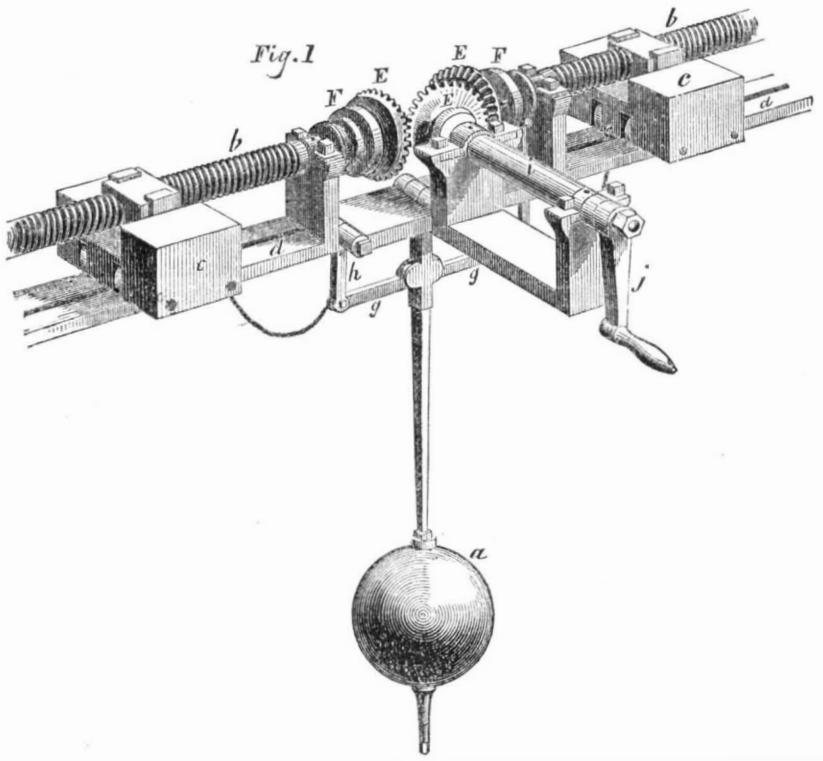
Mr. de Bergue was present, and explained its nature and qualities to quite a number of scientific gentlemen. It is a subject to which he has devoted much study and attention. Working models of the invention are now on exhibition in Paris, and we understand they have attracted no small share of observation by those interested in nautical inventions. We intend to publish engravings of this invention in a week or two.

Apparatus for Testing the Strength of Materials

Mr. R. G. Hatfield, a prominent architect of this city, has invented, and put in operation at his rooms, 396 Broadway, a hydraulic apparatus of great power for the purpose of testing the strength of materials. He has already conducted a large number of experiments for various parties with the most perfect satisfaction. By means of the apparatus the exact cohesive and lateral strength of given samples, as well as torsion, crushing resistance, &c., may be easily ascertained. This improvement will be a valuable and convenient acquisition for builders, manufacturers, engineers, &c., since the strength of any particular size or quality of iron, wood or other material may be quickly known.

NEW BALLAST TRIMMING FOR STEAMBOATS.

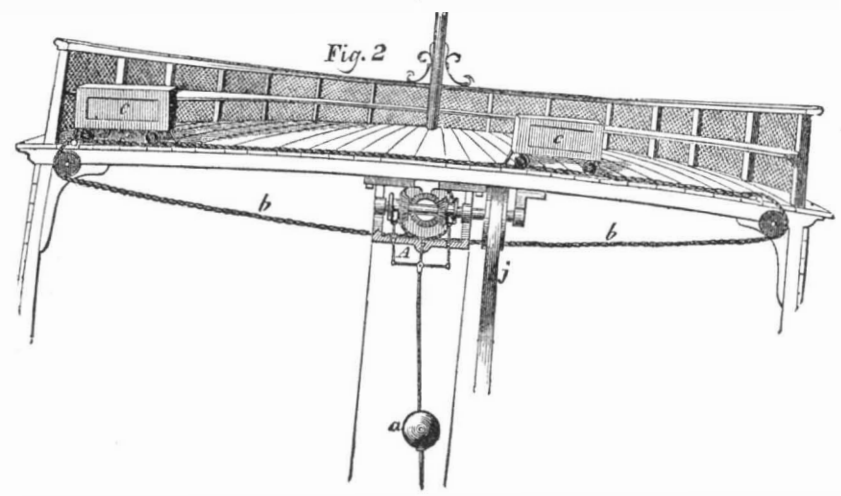
Fig. 1



On all our steamboats ballast boxes on wheels, containing shot or heavy weights, are kept on deck, and wheeled from the lee to the weather side, as adjustable ballast to right the vessel. The annexed figures represent an improved method of shifting such movable ballast, to be used on steamboats and all vessels requiring trimming of ballast The inventors are Thomas A. Sedgwick, of Binghamton, N. Y., and Frederick Sedgwick, Esq., of Stratford, Conn., who have taken measures to secure a patent.

Fig. 1 is a perspective view of the machinery for effecting the object stated, and fig. 2

Fig. 2



the other end of a shaft, *i*, on the inner end of which is a bevel wheel, E, that gears into two bevel pinions, E E, on a loose collar secured on the center of the shaft of the screws, *b b*, which extends from end to end of the frame. By rotating the shaft, *i*, the bevel gear will be moved without driving the screw, if the pendulum is perfectly plumb, for the loose collars of the pinions, E E, will revolve free on the shaft. If, however, the pendulum vibrates out of the true perpendicular, the arms, *h h*, will push one of the clutches, F, towards the back of one of the pinions, E, on which there are clutch pins, so that these will take into one another, and the screw shafts, *b b*, will revolve and move the ballast weights or boxes, *c c*,—the one from the side to the center, and the other from the center to the high side of the vessel, which will then right itself, and the pendulum will assume its perpendicular position, and the is a transverse section, showing the machinery in operation. In fig. 1 *a* is a pendulum with a weight attached. It is hung on an axis above, secured in a plate, and is thus allowed to swing or vibrate as the vessel careens. *g g* are two cross arms jointed to the pendulum, and *h h* are two arms projecting upward from these, and have shippers on their upper ends which take into the grooves of two clutch collars, F F, of the shaft of the screws, *b b*. These screws pass through nuts in the collars of large heavy boxes, *c c*, with friction rollers on their under surfaces, to run on rails, *d d*. The lever handle, *j*, is secured on clutches will free themselves from the pinions. It is therefore a self-acting ballast regulator, for the shaft, *i*, may be kept, and is intended to be kept in motion by the engine, as shown in fig. 2, and just as the vessel careens so will the pendulum, *a*, operate the clutches, F F, to shift the ballast and turn the vessel. This is done by the two center pinions revolving in contrary directions, and by the clutch being shifted so as to take into that pinion that will turn the screw shaft, to bring the weighted carriage or box to the elevated side of the vessel.

In figure 2 the pendulum is shown swung to the right side, and the vessel inclined upwards to the left. The right hand clutch is shown thrown into gear with the right hand pinion, which gears into the pinion on the end of a barrel around which a chain, *b b*, is wound off and on to shift the ballast boxes, *c c*. In this figure the ballast cars run on a railroad, and no screws are used; either of the plans may be used, but they are both alike in the principle of being guided and directed by the ballasting pendulum, and may be used on deck or under deck, for river or lake steamboats. In this figure the ballast box to the left has reached its place, and the vessel is about to assume its proper position. *j* represents a belt to operate the machinery, and A represents the clutch arms of the ballasting pendulum, *a*. The application of this invention to accomplish the objects specified, will no doubt be easily understood by all, as the machinery is exceedingly simple.

More information may be obtained by letter addressed to the inventors, at Binghamton, N. Y., or Stratford, Conn.

The Ericsson.

The above steamer sailed from this port on her first Atlantic voyage on the 16th of this month. It is said that it would not take cargo, and could not get but very few passengers It left this port exactly at the same hour as the *Washington*, our oldest and slowest steamer, destined for the same port. Since they left they have been seen several times. Capt. Robinson, of the ship *R. Robinson*, from Liverpool, reports seeing them on the 17th off Nantucket Shoal bearing N. N. E., 35 miles distant, at 9 A. M.—the *Washington* about eight miles ahead, weather moderate. Capt., Guptie, of brig *Frances Jane*, reports seeing them on the 18th, at 8 A. M., in lat. 40 35, lon. 70 12, both under steam only; weather very moderate; wind from eastward. The *Washington* about two miles ahead. They were seen twice afterwards, the *Washington* still ahead, and the distance widened between them to about 18 miles.

Wire Dish Covers.

Some specimens of plated wire dish covers and painted wire window screens were exhibited at our office a few days ago, from the establishment of B. F. Allen & Co., who have recently commenced the manufacturing of wire goods at Amherst, Mass. The articles shown here, exhibited much perfection in execution, and we were informed that landscapes, views, and designs from engravings or pen and ink sketches, may be transferred to suit the fancy. Orders for these goods are filled by Messrs. Hathaway & Carmer, 13 Platt street, this city.

Horace Greeley and his Accuser in Paris.

It will be observed by our Paris correspondence that Horace Greeley had been put into a French prison, on the complaint of a Parisian artist—M. Leschene—for a claim of $2,500, as damages for a statue sent by the artist to the New York Exhibition, and which was said to have been broken. The claim for damages was brought against Mr. Greeley because he was a director of the New York Exhibition, and on this charge he was sent to the debtor's prison of Clichy, confined for two days, and then discharged, the judge before whom the case was brought having promptly dismissed the complaint.

Great Trial of Mowing Machines.

A great trial of mowing machines took place on the days of the 15th and 16th ult., at Bedford, Westchester Co., under the superintendence of the County Agricultural Society. We have received the report of the Committee appointed to decide upon the different machines, but we have not room for it in our columns this week. We shall publish it in full, with remarks, in our next number.

A Schooner Beating the Steamers.

The schooner *Albert Mason*, Capt. Smith, has proved herself to be one of the fastest, if not the fastest craft of her size plying between this port and Charleston, having made eight trips from dock to dock in thirty-four days, running time. She made one run in sixty-seven hours, reporting the steamship which sailed the same time. The *Albert Mason* was built at Patchogue, L. I., and registers 150 tuns.

We have recently examined several fine specimens of oil distilled from the Breckenridge Coal.

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Scientific American.

NEW YORK, JUNE 30, 1855.

The Length of Human Life.

An article in the last number of Blackwood's *Magazine*, on the above subject, holds out the idea that the age of man should be one hundred years instead of three-score-and ten. The author says, "We do not simply die; we usually kill ourselves. Our habits, our passions, our anxieties of body and mind, these shorten our lives, and prevent us from reaching the natural limit of human existence." Gluttony, he asserts, destroys more lives than intemperate drinking, and yet, "it is the fashion to restrict the term *sobriety* to the moderate use of liquors." A sober life no doubt implies moderation in all things—in eating, drinking, and in the enjoyment of all the pleasures of life. But although we have read and heard much of moderation in eating and in drinking, the difficulty has always arisen in our minds respecting the true standard of moderation. What is it? who will define it? The standard suitable for one is not for another. No man can doubt for a moment the benefits of moderation—temperance in all things. But no man can or should set up his own standard for his neighbor. And yet it may truly be said, that general rules for temperance may be set down, which, if followed, would be of immense benefit; such as "not to eat so much as will unfit the mind for its usual exertions; or so much as will make the body heavy and torpid. Nor to pass hastily from one extreme of living to another, but to change slowly and cautiously, to eat plain and wholesome food, and to proportion its quantity to the temperament, the age, and strength of the eater. Not to allow the appetite for food or drink to regulate the quantity to be taken, but experience, void of sensual desire." These rules, if followed, will tend to promote health, and thus lead to a greater length of days and years in man's existence; still there is a natural period for man to exist and neither food, drink, nor sobriety can place him beyond that. We find that each species of animal has its boundary of life, and so has man. He has his infancy, youth, middle age, old age, and then comes the winding sheet and the *narrow house*. But how long does his existence last? how many years encircle his natural life?—These are important questions. We find that thirty years is considered to be a generation; that is, the whole world is re-peopled every thirty years with a new race, and a like number departs from it in that period. But no person considers thirty years as the natural term of man's life—seventy years being generally set down as that limit. A book, however, recently published in Paris, by M. Flourens, which has created no small sensation in that city, places old age at eighty-five years, and the complete natural life of man about a century. He places first manhood between forty-five and fifty-five, and second manhood from that to seventy, instead of old age at that period. We are inclined to accept his view of the question as the most correct one. Buffon, the naturalist, entertained such an opinion. The rule of life laid down by him is, that animals live from six to seven times the number of years required to complete their growth, such as the horse, which completes its growth at four years lives from twenty to twenty-four years, and a man who takes eighteen years to reach his full growth may live more than a hundred years. There are but few men who live to a hundred years, and just as few horses that live to twenty-four, but that affords no reason why many men, and almost all men of a sound constitution, may not live for a century. The table of M. Flourens relating to life is as follows:

Man grows for	20	years, and lives		90 or 100
The camel	8	"	"	40
The horse	5	"	"	25
The ox	4	"	"	15 or 20
The dog	2	"	"	10 or 12

This is somewhat different from Buffon, but he sets it down as a fixed rule that all the larger animals live about five times longer than the time required for their full growth. This question is one of deep importance to the whole human family. It is one to which the ingenious Frenchman has brought a great amount of knowledge in investigation, and he holds up science, as presenting to all men by a life of sobriety, a very extended fund of existence.

Education and the Laws of Health.

The Philadelphia *Ledger*, in a very excellent article on the above subject, states that the Directors of Herriot's Hospital, in Edinburgh, Scotland, have resolved to impart to all the pupils connected with that institution, a knowledge of the elements of physiology and the laws of health. The *Ledger* says:

"There can be no better proof required of the increasing intelligence of the age than the adoption of this reform in one of the most conservative institutions of one of the most conservative capitals in Europe. On this side of the Atlantic, the study of physiology has been introduced into numerous schools; but hitherto, in Europe, this important branch of knowledge has been ignored in academies for the young, while Latin, Greek and Metaphysics have been crammed *ad libitum* down the throats of pupils."

In connection with this, let us say, that the Directors of the Hospital mentioned have long followed a practice which all our Academies would do well to copy; that is, giving their pupils manly physical, as well as mental training. Athletic exercises of various kinds, and the army drill by an old soldier, have long been taught in Herriot's Hospital, and we apprehend that these are more necessary for youth than simple mental instruction in the elements of Physiology. In all our common schools Physiology is daily taught, while its principles are daily violated by the very rules of these schools. Children of from five to twelve years of age are compelled to attend school from 9 A. M. to 3 P. M., without being allowed to go home for dinner; and we have known some instances of little ones having had their cold lunch stolen, who were actually refused permission to go home when suffering from hunger, and thus they were compelled to sit and study, without food, for a larger period than it would be prudent for grown-up men and women to fast. The children in all our schools should be allowed one full hour for dinner every day. This is as necessary for them as for adults. What is the use of teaching children the laws of health in our schools and at the same time compel them to violate those laws.

We do not object to Physiology as a school study—we approve of it, but we must say that our school teachers and Commissioners of Education are of all the persons we know, the very ones that most require to be put through the rudiments of the *laws of health* and common sense, respecting both the habits of pupils and the several branches of information which they are taught. The most of the teaching is impractical, useless, mindless—no better than a parrot's roll-call. Like what was declared by a celebrated orator respecting the Constitution of England, the system of education pursued in our schools is everything and nothing. An educational reform is certainly demanded, not only for the schools of New York, but those (as we have been informed) of all our cities together.

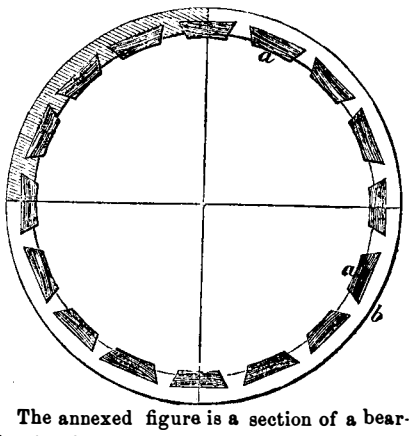
New Artificial Stone.

The composition of sand, plaster of Paris, and blood, for which a patent has been granted this week [see the claim on another column,] is capable of being molded into the most elaborate architectural ornaments and copies of sculpture; and it assumes the character of stone in a few hours, without baking or any other specific treatment after being molded. The manufacture of this stone is at present carried on at the Hamilton Works, Newark, N. J., and a company of men of capital has been formed John Wood, being at the present time its Secretary. A meeting of those interested in the undertaking was held at the Metropolitan Hotel in this city, on the evening of the 15th inst., at which some beautiful specimens were exhibited, and one made but a few hours before. These comprised, trusses, lintels, sill-tops and bas-relief for a new store on the corner of Columbia and Carrol streets, Brooklyn, which excited admiration. These resembled the common brown free stone used for buildings in our city, and in hardness and strength were equal, if not superior to it. It grows harder with age, and its introduction for building and architectural purposes, presents in prospect the dawning of a new era in architecture, as ornamental work, like brown free stone, can be produced by molding this composition, at a cost far below that required for carving such work with the mallet and chisel.

Prof. Mapes was present and made a speech on the subject, (which has been published.) It was a disquisition relating to the chemical action of the substances employed in the composition. He presented, as the main feature of the composition, that of the silicate of potash, formed by the chemical union of the small quantity of potash in the blood with the sand, and never said a word respecting the action of the blood and the sulphate of lime. Nor did he take any notice of the action of the common salt (amounting to half the ash of blood) nor of the soda, which is equal to the potash in uniting with silicic acid, (sand) nor the phosphoric and carbonic acids contained in the blood. If he had simply said—"Gentlemen, the ingredients of this composition are blood, sulphate of lime and sand, which are kneaded together and molded in a moist state and these seem to unite chemically, by long and close contact, forming, as you see, beautifull and perfect hard stone;" he would have said all that possibly could be said of it, chemically.

That the composition forms beautiful hard stone, capable of being molded into any form, is beyond all doubt a fixed fact. We hope it will be the means of gratifying and elevating the taste for ornamental architecture, as it is specially adapted for such purposes."

Wood Bearings for Screw Shafts.



The annexed figure is a section of a bearing for the screw shaft of the *Malacca*, a 17-gun steam sloop, belonging to the British navy, and illustrated in the London *Artisan*. *b* is the brass bearing, and *a a* blocks of wood to fit in recesses in the brass. The brasses are bored out about three-sixteenths of an inch larger than the shaft, and the recesses are slotted out, as shown, to receive the wooden strips, *a a*, which form the bearing of the propeller shaft. This is stated to be a valuable improvement, and has been introduced into quite a number of the navy propellers. It is a subject of no little importance to our marine engineers, who have not yet devoted that attention to propellers which their general economy seem to demand. It is rlso applicable to all kinds of shafting.

Great Traveling.

The railroad is no doubt a vast leap in rapid traveling from that of the old stage-coach, the ratio being as five miles per hour by the latter to thirty-five by the former. But that will not do yet; we must move considerably faster some of these days, and the lucky inventor who first makes easy and safe traveling at the rate of 100 miles per hour, will deserve more than a marble slab erected to commemorate his achievement. We have expressed ourselves a number of times in reference to the possibility of locomotives traveling at this rate, but such a standard may be too high for them; they all at least appear to be old *fogies* in comparison with the atmospheric ship of W. D. Banmistle, of Adrian City, Michigan, who recently made a voyage from that place to Clarion Co., Pa., a distance of 350 miles, in four hours.

And how did he do it, by steam or electricity? Neither of these, but simply by a common balloon 30 feet in diameter. At this rate of traveling it would only take about 34 hours to reach Liverpool from New York. Who is the daring aeronaut that will make the first aerial voyage from America to Europe. If aerial navigation were rendered perfectly practical—sure and safe, it would supersede all other modes of traveling. Balloon voyagers would then sometimes look down upon our huge steamships floundering among the waves below, and crack a joke at the heavy tragedy they were performing.

Third Exhibition of the Kentucky Mechanics' Institute.

The Third Annual Exhibition of this spirited Institution will be held in Louisville, in the months of September and October, this year. Mechanics, artists, and manufacturers from all parts of the Union are invited to contribute articles for the Exhibition. The hall of the Institute is commodious, embracing 17,000 square feet of space. Steam power for driving machinery will be furnished to applicants, and the galleries will be set apart for works of art.

Those wishing to contribute articles, and desiring any information respecting the Exhibition, can obtain the same by letter addressed to M.M. Green, Secretary. The Hall is to be open for goods on the 18th of September.

Tribute of Praise to the Commissioner of Patents.

On the 15th inst., the Rev. Francis Vinton, D. D., of Grace Church, Brooklyn, one of the examiners of the graduating class at West Point, delivered an address to the students, in which we find the following tribute of just praise to Judge Mason, who, like the reverend orator, is also a graduate of West Point—an Institution which has educated so many distinguished men:—

"Wherever graduates have entered the walks of civil life, they have proved themselves rivals of the best civilians. Witness the illustrious Secretary of War, whose fame is betokened alike by the Laurel and the Olive wreath—whose merit shines not less as a soldier than as a legislator—whose genius will be found competent for any future emergencies either in the Cabinet or the Field.

And witness, too, the Head of the Patent Office, the honest man and the discriminating Judge, whom no labors can tire, whom no difficulties can daunt, whom no sophistry can deceive, and who has won the eulogiums of inventors themselves, even those whose claims he has denied."

An American Mechanic in Charge of the British Armory.

James H. Burton, late master armorer in the National Armory at Harper's Ferry, Va., has received from the British Government the appointment of engineer of the British National Armory at Enfield near London. Although that armory is under the command of Capt. Dixon of the Royal Artillery, Mr. Burton will have the entire direction of the manufacturing operations of the establishment. This is another compliment to American mechanical skill.

Mr. Burton, as might have been expected, has been one of the constant readers of the Scientific American. In the manufacture of small fire-arms, both as it respects quality and economy, the American armroies, have long been in advance of those in any other country.

Prof. Youatt, of England, in cases of persons bitten by mad dogs, it is stated, has healed more than four hundred cases with muriate of silver, and not one had any symptoms of hydrophobia.—[Frreign Exch.

[Mad dogs must be plenty in England, or Prof. Youatt's practice must be enormous, to have had so many cases of so uncommon a disease to treat.—[Ed.

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Foreign Editorial Correspondence.—No. 4.

Paris Exhibition, &c.

PARIS, May 28, 1855.

To-day being observed as a general fast, all the galleries, museums and palaces of the city are closed, and all labor upon the public works is suspended. But Sunday being regarded as a holiday in France, the public places are kept open, and additional attractions are usually marked down in the programme of the day. The newspapers duly inform the public that the magnificent water works of Versailles and St. Cloud will be displayed on every other Sunday for a certain length of time, or that a steeple-chase will take place at Long Champs. Whoever cares to keep a strict Sunday here, will find his means of sight-seeing somewhat curtailed, as several attractive features of Paris and its environs are rarely to be seen on any other day. The Palace of Industry is kept open every Sunday, and by an especial arrangement of the Emperor, made with the Company, the public were on that day (yesterday) admitted to the Exhibition free of charge for the first time; and it is reported that over 80,000 persons passed through the entrance wickets.

Some English and Scotch Exhibitors entertaining a different idea of how Sunday should be kept, and considering it of the same importance all the world over, have seen fit to close their exhibition stalls on Saturday night—and keep them closed until Monday morning, evidently preferring "to do no manner of work" on a day especially designated as "holy." This scrupulous regard for Sunday does not suit the convenience of the visitors to the Palace, and even some correspondents of English newspapers are clamoring loudly against the moral courage of these people for attempting to enjoy that liberty of conscience "wherewith they are made free." These writers denounce it as an "insult to the French people—an exhibition of bigotry, unlawful and impertinent;" and they call upon the British authorities "to bring these refractory exhibitors to reason—to a sense of decency."

The works inside the Palace of Industry move slow, and its backward condition begins to dull the ardor and intent which the people have all along taken in its success.

But for the influence of the Government (which is infused into all enterprises of a public nature,) and the consummate tact in selecting a good location for the building, the prologue of failure of the French Exhibition as a financial speculation, might now be pronounced.

The French Exhibition offers varied and decidedly brilliant attractions, and in the aggregate, will occupy nearly as much space as the London Palace; but being divided into several different buildings, there is less uniformity of plan, and less effectiveness of classification. Three of the buildings are given up to the general articles of the exhibition—machinery, &c., while a fourth is devoted to the exhibition of fine arts, and to enter which visitors are required to pay extra. This part of the exhibition contains about 5000 specimens of modern art, from the best artists living, and forms a delightful and truly splendid exhibition. One would never tire of looking at its beautiful collection of gems, did not nature, ever watchful and vigilant, act as a monitor over the senses.

The Imperial Commissioner allows each exhibitor to attach the price to his articles; therefore, the lady visitors are supplied with good facilities, and sharp incentives to make the exhibition a rendevous for initiatory shopping. I can say of the exhibition in its present shape, that it is fine; but to undertake a notice of the articles by any system of nice discrimination, would be a needless and very unsatisfactory job. There is, however, one specimen of hair work, which merits special attention. I examined it for some time, with admiration for the skill displayed in its fabrication. It is a large concave picture of a pastoral scene in autumn.

The landscape stretches back with all the effect of the painter's art, and in the foreground is a pond of water. Overhung by several varieties of wild grass and shrubbing, on its bank are represented ducks of different colors, while above them appears the figure of a spread eagle resting upon the stump of a tree. The entire piece is done in human hair, and it made the cold chills run over me to think of the amount of patient industry required in its production. The coloring has been effected by the use of hair of different shades. The artist failing to find *green hair*, was obliged to select a season when the foliage is generally *done brown* by the attacks of frost. The artist, Mr. Lemonnier, occupies a high rank in Paris as an artist in hair.

Turning from the Palace and its fancy trappings and showy ornaments, I purpose to glance at some matters going on outside.—At present, labor seems to be actively employed. This is owing to the vast army required upon the public improvements now in progress. Many are at work on the grounds about the Palace and in the public streets and squares, in putting on the crust of asphalt, commonly used in Paris for side walks and public promenades. It makes decidedly the best walks I have ever seen.

Cakes of asphalt, about the size of a half brick, are melted into a liquid, and while in this state a quantity of granulated stone is mixed with it; then, by means of large iron ladles, it is carried to the spot where it is to be used, and then poured out—and as soon as this is done, the mass is hastily spread by means of a spatula, and in a few minutes it hardens ready. In countries where flagging stone is not easily procured, such a system recommends itself. It would scarcely answer, however, in cold climates, as the frost might cause it to crack.

The principal streets are macadamized, and appear to be excellent. I cannot say how far such a system could be made serviceable in American cities, but here, with all the omnibuses and carriages, it is regarded as better than the square stone block pavements, which have heretofore been extensively laid down.

I am not troubled to find the SCIENTIFIC AMERICAN here. It is well-known among the scientific men of Paris, and would meet with a still more extensive circulation if the English language were more generally known I have heard this opinion frequently expressed by intelligent men here. They are surprised at its low price, and I will state what is a fact—that the postage amounts to more than the subscription price. This acts as an embargo on its circulation to some extent.

In a few days I expect to take a ramble over some parts of the continent, and on my return I hope to find the mechanical department in better order for examination than it is at present. I have heard it significantly hinted, that the display of new inventions will fall below par. We shall see.

S. H. W.

PARIS, June 4th, 1855.

My last apprised you of my intended early departure for Germany, and my arrangements are yet unchanged—I shall leave tomorrow. "Then why another letter from Paris?" you say. Why indeed! For one of the best of reasons—because I have something to write about. What think you of such a thing as the arrest of Horace Greeley? Now don't say it is impossible, or all moonshine, for I can assure you it is perfectly true. I have this moment returned from a visit to his uncomfortably close quarters, where I found him engaged in studying French law while he lavishly dispensed American politeness to his many sympathizing visitors.

Mr. Greeley was not presented to the prison authorities as an "absconding debtor," "a fast liver," or a "genteel swindler," for whoever is acquainted with his characteristics will at once acquit him of these. The facts, as at present developed, appear to run thus:

A French exhibitor at the New York Crystal Palace had a fine piece of statuary accidentally destroyed, and the defunct condition of the Association rendered it improbable that he would ever recover the loss. His wits have been sharply exercised to find out some remedy for his misfortune. The travail of his ingenuity came to an issue on Saturday, and, with writ in hand, under the convoy of a posse of police, the Sevastopol of Mr. Greeley's domicil was stormed, and he was taken prisoner.

It will be remembered that upon the attempted resurrection of the New York Exhibition under the touch of Barnum's wand, Mr. Greeley became one of the directors, and it appears that the injured French exhibitor has lately received an official circular of the Association, with a piratical line drawn under Mr. Greeley's name.

This was the signal of attack, and Mr Greeley was thereupon shoved into prison to await the decision of the tribunals as to his personal liability in the matter. If this can be made out under the existing statutes of France, there is no knowing how long he may feel obliged to remain in Clichy, for this point once established, other imperial claimants might pounce upon him, and thus render his situation very oppressive.

Mr. Greeley had abundant means at his command to effect his discharge if the officers would have accepted bail, but this they would not do. Nothing would satisfy them but the payment of the claim of 12,000 francs, the entimated value of the statue, which Mr. Greeley very properly declined to give, prefering to suffer imprisonment until his legal position could be settled. If he had paid the claimant the amount, it would of course have been past recovery, and before he could procure permission from the Prefect of Police to leave the country others might have caused his arrest on similar claims.

The Secretary of Legation, Mr. Piatt, and Maunsell B. Fields, Esq., President of the American Commission at the Palace, used every exertion to procure his liberation on Saturday, but no; and so with one grand splurge an American citizen was put under lock and key. The fact was announced to a party of Americans who had assembled at a feast given by Mr. Field to the American Commission, and, as Mr. Greeley was expected at the feast, his detention, especially under such pretexts of arbitrary assumption, caused much indignation.

It is but an act of justice to the French exhibitor to state, that he entirely disclaims any intention to oppress Mr. Greeley. His object is to secure pay for the broken piece of statuary which he had so carefully carved out, and he avails himself of that redress offered to him through the French law. He declares that he has already written thirty-six letters to the New York Association, and can get no satisfaction, and as Mr. Greeley's arrival in Paris was notified to him by his agent in New York, he felt bound to take his chance at him as a director of the Association.

It is Mr. Greeley's misfortune to have been connected with a complicated and badly managed affair at home, and he is surprised to find himself here a victim of his own action. The real difficulty in his position is, therefore, attributable to the severity of the law, rather than to any bad motive on the part of the artist.

I still hope and believe, however, that Mr. Greeley will be promptly discharged. I wish this, not only for his own sake, but also for the protection of Americans who wish to come here. An American doing business in Paris remarked to me this morning, that he should feel obliged to quit the place at once if the law should be made to apply with such stringency.

"Horace Greeley's Life in a French Prison," will form another interesting chapter in his biography. Romance and reality are elements essential to the life of an editor, and the more diverse and startling they are the better—for the readers amusement.

The fact of Mr. Greeley's arrest and imprisoment in Paris, aside from all unpleasant consequences to him, is one of the most amusing things I have ever met with. Imagination may gather up a number of laughable thoughts out of it.

Who will ever live to see the end of the New York Exhibition? Its sickening trail is dragging itself over all who were unfortunate enough to meddle with it. August Belmont, of New York, formerly one of the directors of the Exhibition is now here, and I presume he might find himself in limbo were it not that he is a foreign Ambassador, and therefore not liable to arrest.

I presume the affair will be speedily arranged, and do not doubt that so soon as it *is* terminated, Greeley will be on the wing, *i. e.*, a bird of passage. He has seen the elephant to his satisfaction, and if he ever gets out of the scrape he will be off for home and no mistake.

S. H. W.

P. S.—Since writing the above I learn that Mr. Greeley has been set at liberty. I suppose the Judge found out that Greeley's liability (if there were any) is regulated by the New York laws, and not by those of France.

The Reptiles of Texas.

A correspondent of the Charleston (S. C.,) *Mercury*, who has resided in Texas for several years, describes his experience with the poisonous reptiles of that country. He states he was bitten four times by snakes, in which he tried whisky as an antidote, but found it of no benefit. Warm applications and tobacco were found effectual. In one case he tried the cupping glass and found it better than anything else. He says, "The centipede varies in length from five to ten inches. Its jaws work horizontally, and it has about fifty feet upon each side, each of which is well armed with a sharp and poisonous nail.—The centipede upon the whole, has more points of resemblance than of dissimilarity to the common earwig of this section. Both the tarantula and centipede are extremely poisonous, but which is the most so, it is difficult to tell. I have frequently seen lizards held to them, both, and never knew one to run exceeding three feet, after being bitten by either. The centipede is generally found about old logs and dilapidated trees in the woodlands, and are seldom seen upon the large prairies. The tarantula is also mostly confined to the woods and fields, though they sometimes take a tour in the prairies.

The stinging lizard has no resemblance to any of its relatives, either lizard or alligator; but has a body more the shape of a cricket, with legs like a spider, and a long tail, the largest part being at the greatest extremity from the body, which envelopes the sting which, though very painful, is not very dangerous."

Statistics of Lowell Manufacture.

The capital invested in the manufactories of Lowell, on the 1st of Jaunary, amounted to over $14,000,000. There are fifty-two mills, running 371,838 spindles, and 11,407 looms. At these and other departments of the woolen and cotton manufacture, 8,723 females, and 4,542 males are employed. This working force produce weekly 2,230,000 yards of cotton cloth, 80,000 yards of woolen, 25,000 yards of carpeting, and 50 rugs, consuming therefore 735,000 lbs. of cotton, and 90,000 lbs of wool.

The Usefulness of Toads.

Toads feed on all kinds of worms, and should never be killed in gardens. The canker worm is a favorite food with them; they are useful in destroying all kinds of garden grubs.

The Olive Tree in the South.

R. Chisholm has written a letter to the Charleston *Mercury* (S. C.,) in which he states that he has cultivated two kinds of the olive for ten years, and that its fruit ripens fully in the low countries of the South. He has now three hundred trees under cultivation, but he believes that it cannot be cultivated at present for the sake of its oil, as cotton is a more profitable crop.

Sea Island Cotton in Texas.

The Galveston *News* states that sea cotton is successfully cultivated in several parts of the State, and that there is a general disposition at various places, from Gonzales to the Gulf, to go into the cultivation of this description of cotton. Not less than one thousand acres, the *News* is informed, will this year be cultivated in this cotton in Western Texas.

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TO CORRESPONDENTS.

A. J., of N. H.—The fact of your having filed a caveat will not debar others from constructing and selling machines of the same construction. Should you obtain a patent you can recover for infringement only from the date of the patent, not from the filing of the caveat.

J. R G., of Ohio—You will perceive that the article you allude to has been published. Your design for sawing is very good, but a patent could not be obtained for it.

H. W. W., of Mass.—We think your invent on possesses one patentable feature, viz., the method of regulating the pressure of the spring. It is no infringement of Webster's. The expense of a patent is so small that it ought to pay the cost.

J. D. B., of Ala.—We think that the improvement in thrashers, which you describe, can be patented. $1 received.

C. A. H., of Conn.—Apply to Joseph E. Holmes, Esq., Newark, Ohio, Machine Works, for the engine, etc. At that establishment they make some of the best engines, portable and others, to be found in the country.

F. W. E., of N. Y.—To restore old hard boots and make them soft, steep them in cold water for a few hours and then give them a dose of neat's foot oil.

N. M. G., of Mich.—We cannot give you a receipt for outside plaster on lath that will stand the weather. The best you can do is to put on common plaster, allow it to dry, then wash its surface with a strong solution of alum, and allow it to dry, and afterwards give a coat of oil paint containing no turpentine.

J. G. S., of Geo.—We have published all the receipts to which you allude in former volumes of the Sci. Am., 7, 8, and 9, and we do not like to publish them again.

D. C., of Pa.—There is nothing patentable in your dumping box.

J. K., of Pa.—Gwynne's pump operates as a suction; it can be made to lift an immense quantity of water.

K. H., of Ohio.—We do not know of a work as profound and useful as the one you want. The Metal Worker's Assistant may answer your purpose.

J.C , of Ga.—Cannot tell you the price of Sted man's sewing machine; write him.

R. M. H., of Pa.—$55 will cover all expenses of the application for a patent.

P. F. C., of Pa.—Your money has not been received;—the best battery to use for blasting is one illustrated in this number of the Sci. Am.

J. W. B., of Pa.—If you keep your rake handles well painted and dry you need have no fears of the small grub that eats them.

G. W. M. of Vt.—For a very small column of water and a very high fall, as stated in the article to which you have referred, you can easily understand how the velocity can be reduced and the momentum given out better by an engine than a water wheel.

J. H., of Boston—We have not yet obtained an account of the cement you speak of, but it is well known that a cement of gutta percha and india rubber, in solution, will unite the soles of boots to the uppers very firmly.

L. S. & Co., Pa.—The first Vol. Scientifc American cannot be obtained; it is very scarce.

W. S., of Boston—We cannot tell you how to copper pins without a battery. The London *Mining Journal* contained the account you refer to.

A. S. H., of——You can have the sectional area of the barometer tube of any size. The price of common tubes is only a few shillings.

B. S. B., of Fla.—A hydraulic ram will not answer to throw up water to drive a wheel. It would be better to apply the water direct to an undershot wheel.

A. L., of Pa —A pipe is not so strong as a solid piece of iron of the same thickness. A tube is stronger than another piece of metal of the same weight. Make the corn-sheller, crusher, and saw, neat and just as convenient for handling as you can.

G. F. of Wis.—You are right about the buckshot for howitzers, but in storming Sevastopol the bayonet alone will be used. At present large balls alone can reach the forts.

W. B. G., of N. Y.—We really cannot answer your question. The amount of water your boat has to displace can be measured by the submerged section; the weight of water is 62½ lbs to the cubic foot. The pressure of the steam, the area of piston, and its velocity, will help you to arrive at a proper conclusion.

J. R. S , of N. Y.—We cannot give you a better plan than the one you have tried to preserve the strawberries, only to keep them for a longer period in the boiling water before you solder the cans. Some oxygen must have been left in the ones you tried.

J. McP., of Ark —Whitewash cannot be made to adhere like white lead. Use a little glue, salt, and alum in your whitewash, to prevent it rubbing off.

O D., of Md.—McCormick is patentee of the zig-zag side edge reaping cutter.

J. S , of N. Y —There is really no such an independent force as that called centrifugal; the force so called is an exhibition of the law of inertia. Examine the question thoroughly, and you will fin this to be true.

C. A. W., of Iowa—See a report on the subject of scale in boilers on another page.

If "One who understands gas," will just show that he does so, by a respectable short letter relating to Howd's Regulator, it may find a place in our columns. The letter you have sent us has a very appropriate signature so far as the letter itself is concerned.

R. H., of N. Y.—You should always surround the stove pipe with a collar of earthenware. The expansion and contraction of the pipe shake the bricks loose.

B. T., of Mass.—There is no safer nor cheaper way for you to protect your interests in England than to have a provisional patent taken. The total expense for six months would be about $100. This amount would apply towards the completing of the patent.

F. W., of Ohio—In speaking of high pressure steam, always remember that an equal quantity of it is just low pressure steam confined in less space. Fairbairn means nothing more. High pressure engines should always have a cut off, not to allow them full stroke, because there is a back pressure or resistance to be overcome by the inlet steam each stroke. This is the case in all locomotives.

P. F. C., of Pa.—We have received your electro plated egg. It is a curiosity; accept our thanks. The mercury for covering glass is an amalgum of tin foil and mercury. The mode of applying it, we believe, is a very difficult operation. We are not acquainted with it. The battery of Chester, on another page, is good for blasting purposes.

Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, June 23:—

S. & B., of Mich., $25; T. B. M., of Mass., $30; M. McG., of Mich., $10; T. E. C. B., of Ky., $17; J. A. W., of Ark., $30; J. F. H., of Pa., $30; W. S., of N. Y., $10; S. & W. H. B., of O., $30; A. G , of Mass., $30; G. P. D., of Pa., $30; W. & M., of O., $30; D. W., of N. Y., $30; J. & E. A., of N. J., $70; R. W., & D. D., of O., $25; L. D. P., of N. Y., $25; H. T. R., of Mass., $10; H. T., of O., $10; J. H., Jr., of Wis., $55; D. F. K., of Mass., $10; S. R., of La., $35; M. S., of O., $30; G. B., of Wis., $43 E. B. G., of N. Y., $25; W. F., of N. Y., $30; J. A., of Pa., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, June 23:—

M. McG., of Mich.; T. E. C. B., of Ky.; J. E., of Mass.; S. & B., of Mich.; L. D. P., of N. Y.; R. W., & D. D., of O.; S. R., of La.; J. F. S., of N. Y.; H. J. C., of N. Y.; W. F., of N Y.; J. & E. A., of N. J.; J. A., of Pa.; G. B., of Wis.

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Private consultations respecting the patentability of inventions are held free of charge, with inventors, at our office, from 9 A M., until 4 P. M. Parties residing at a distance are informed that it is generally unnecessary for them to incur the expense of attending in person, as all the steps necessary to secure a patent can be arranged by letter. A rough sketch and description of the improvement should be first forwarded, which we will examine and give an opinion as to patentability, without charge. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country. Circulars of information will be sent free of postage to any one wishing to learn the preliminary steps towards making an application.

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A. B. ELY Counsellor at Law, 52 Washington st., Boston, will give particular attention to Patent Cases. Refers to Messrs. Munn & Co., Scientific American. 16 1y*

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Science and Art.

The Art of Dyeing —No. 27.

BUTTERNUT BROWN—A very good cinnamon brown color is dyed with butternut bark and camwood, and many of our farmers' good-wives are well acquainted with the method, but to those who are not, the following will be useful:

For 24 yards of common home-made woolen cloth, put into a large clean kettle 3 lbs. of camwood, and 3 pecks of butternut bark, and allow them to boil for ten minutes; the cloth is then entered and boiled for one and a half hours. The cloth is then lifted, and two ounces of copperas placed in the kettle, dissolved, and the froth skimmed off; the goods are then re-entered, boiled for half an hour, lifted out, washed and dried. By increasing the quantity of these dye stuffs, and using more copperas for saddening, a darker brown will be produced. The butternut bark is used as a substitute for fustic, it makes a fast color, but does not give as rich a hue to the goods.

HICKORY BARK,—By preparing woolen goods in an alum mordant of 4 ounces to the pound of wool, and washing the goods well afterwards, they can be dyed a beautiful brown by using hickory bark, butternut bark or yellow oak bark, as substitutes for fustic, and pursuing the process above described. Lombardy poplar bark or the leaves of the peach tree, may also be used for the same purpose and in the same way.

From almost every tree in our forests, by the use of an alum mordant or preparation, some camwood, and a little logwood (always saddening as described with copperas) every variety of brown shades may be dyed—The easiest way, however, to dye good browns on woolen goods, is that described in the first receipt of last week's article.

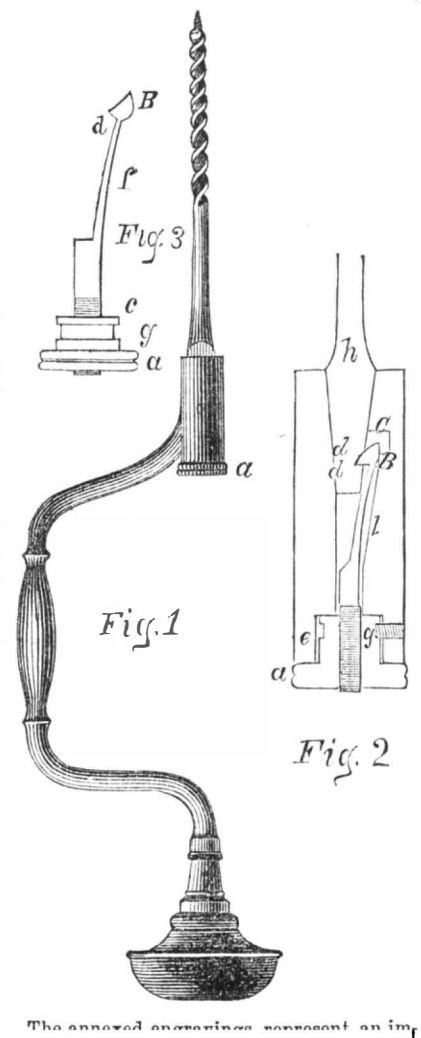
BRONZE COLOR—For ten pounds of woolen goods, use five pounds of logwood, one of camwood, and half a pound of alum. Boil the goods in the liquor for two hours, then lift them out and wash them well. Into another clean kettle of boiling water, add five pounds of fustic; boil the goods in this for one hour, then lift, wash and dry.

DARK CLARET BROWN—For ten pounds of goods, use 8 lbs. of logwood, half a pound of crude tartar, as much of alum, and one gill of the muriate of tin. Boil the goods in this for one hour and a half, then lift and wash them well. Into another clean kettle of boiling water, place one pound of fustic, and half a pound of crude tartar; enter the goods, boil for one hour, then lift and wash them, and they are ready for being dried. This color is subject to *crock off*, hence the last course described—boiling in fustic and tartar, is simply for the purpose of rendering them cleaner—some call it "*setting* the color."

The muriate (chloride) of tin must never be used with camwood. It may, however, be employed as a preparation or mordant for camwood, like alum, but great care must be exercised to wash the goods before they receive the cam wood.

BROWN COLOR ON COTTON—There are various ways of dyeing this color on cotton, all of which are different from that pursued for dyeing the same color on silk and woolen goods.

RICH BARK BROWN—The cotton is first dyed a deep yellow with quercitron bark, 3 lbs. to the 10 of goods, then washed, and then steeped in sumac for twelve hours, and afterwards mordanted in the red spirit tub for about two hours, receiving a preparation exactly as if for claret brown. About four pounds of peachwood and two of logwood are then boiled, and in this liquor the goods are handled for half an hour, and raised with some spirits. This is the only correct method of dyeing a rich bark brown on cotton. It is positively necessary that the goods should have the proper depth of yellow on them before they receive the redwood and logwood, and that they should be dyed as quickly as possible in the latter bath. It is exceedingly difficult to bring up bark browns to the proper shade if they fail in yellow. The yellow color leaves the cotton—dissolves off as it were—by long handling in either redwood or logwood liquors, hence the necessity for a certain depth of yellow as a base, and rapid handling in the finishing dye liquors.



The annexed engravings represent an improved mode of fastening auger and other bits to their sockets, for which a patent was granted to Ebenezer W. Nichols, of Worcester, Mass., on the 15th of May last. Fig. 1 is a side view of a bit stock, with an auger in it; fig. 2 is a half section of that part of the stock in which the shank of the auger or bit is fastened, and fig. 3 is a detached view of the burr-nut and steel spring. Similar letters refer to like parts.

The nature of the invention consists in the peculiar method of fastening the shank of the auger or other kind of bit into the socket of the bit stock, so that the act of boring or drawing the auger from the hole bored, shall have no tendency to loosen the said shank, whereby the auger may be fastened in its place or detached therefrom with the greatest facility desired, and when adjusted in its position, very little strain comes upon the fastening of the auger. Fig. 2 is a half section of that part of the bit stock which holds the auger (or bit) *h*, in which an appropriate opening is made by a sand core when the bit stock is cast, (the most of which are made of malleable iron.) Said opening extends through and is of suitable form to receive the bit *h*, by the side of which, and about three-fourths of an inch from the end of the taper opening is a recess *c*, against which is a notch *d*, in the bit *h*.

Into the notch D, fits a corresponding projection, D,' which is brought into its place by means of the burr nut, A. To loosen the bit, H, unscrew the nut, A, and the projection, B, springs back into the recess, C, by the spring, F.

In fiig. 3, may be seen the spring, F, upon one end of the projections, B and *d*. Upon the other end is cut a screw, and a corresponding thread in the burr nut, A. In said nut is a groove, *g*, (fig. 3) into which is placed the set screw, *g*, (fig. 2) which holds the nut stationary endwise, and adjusts the projections, B *d*, as desired to both fasten and unfasten the bit, H.

The claim of this invention is for the burr-nut, A, or its equivalent in combination with the spring, F, operating upon the wedge principle (by the use of the screw,) the projections, B *d*, for the purpose and in the manner herein described.

Application of Essence of Coal as a Substitute for Oil of Turpentine.

M. Pelouze, proposes to use an oily fluid as a substitue for oil of turpentine in painting. He obtains this fluid, which boils from 100 to 168° Centigrade, by the distillation of cannel coal, by means of superheated steam. This liquid is colorless, very fluid, and volatile, leaving no stain upon paper, and is not altered by exposure to light. It has a penetrating smell, which reminds one of common coal gas; but this entirely disappears when it has evaporated. A number of comparative experiments having been made with the object of comparing it with oil of turpentine, by a committee of the Society d'Encouragement of Paris, all of which resulted in showing that walls, woodwork, &c,, painted with the essence of coal, dried far more rapidly, and the smell disappeared sooner, than where essence of turpentine was employed. For example, in one case where the coal essence and oil of turpentine were respectively mixed with three times their volume of oil, and employed under exactly similar circumstances, the smell of the essence of coal was completely dissipated at the end of three days, while that part painted with the turpentine mixture had a strong smell, and was not completely dry.—*Bulletin de la Societe d'Encouragement.*

Treatment of Tomatoes.

During the early part of the growth of tomatoes, the surface of the soil should be frequently disturbed. When they have set their fruit they may be shortened, and it may be deferred until the fruit is of half size, when it may be readily observed that 90 per cent. of the fruit is within 18 inches of the ground, while 90 per cent. of the vine or bush is beyond that distance. The vine, therefore, should be trimmed to within half an inch of the tomato nearest the end of each branch. This will admit sun and air freely, and although ten per cent. of the tomatoes that might have grown will be taken away, still the remaining portion will be greater in weight and measure than if the vine had not been shortened in. Tomatoes are also several days earlier by this treatment.

Yeast for Putrid Sore Throat.

The following relating to the cure of this terrible malady, is taken from *Nelson's American Lancet*:—

"Boy 12 years old; all the symptoms of malignant sore throat, with eruption of the face and neck of a dark color; eruption extended over the whole body on the fourth day; symptoms of ulceration and typhoid fever; pulse small, thready, feeble and quick; mind wandering and incessant muttering; inability to articulate intelligibly; alternate severe pains in the head and abdomen; little sensibility in the throat; small white gray spots throughout the mouth, tongue and fauces, and numerous petechiæ on the face and abdomen. Ordered half a pint of fresh brewer's yeast, mixed with a half pint of water and brown sugar sufficient to flavor, one tablespoonful to be taken every two hours; gargle of borate of soda, honey, and infusion of sage; occasional sinapisms to the throat. Up to this time the fever and eruption had been regularly intermittent, coming on about 2 in the morning, and subsiding about 12 M., when the skin became quite smooth, and very slight signs of the eruption. Great change had taken place the next morning; had rested tolerably well during the night; tongue and mouth nearly relieved and clean; fever and eruption quite moderate, and passed off before 9 o'clock; could eat with facility, and food was allowed him freely. He continued the yeast mixture for two days more, when all that was required to constitute him perfectly well was strength."

China Sea Grass.

China grass is an article which should be immediately introduced into the United States. In China it is cultivated along the borders of rice fields. In Queen Elizabeth's time, clothes made of it were imported into Europe. The Hollanders preferred it for fine fabrics to those made of flax. The tenacity is such that a thread may be spun one hundred and seventy-five feet long without winding. It is fifty per cent. stronger than flax. A thread over six miles in length weighed only a trifle over one thousand two hundred grains.

It has recently been discovered that young fry of salmon must remain two years in fresh water before they migrate to the sea. It had been supposed that they only remained one year.

Delmonico's Hotel, in this city, is to be illuminated with Gesner's Kerosene Gas.

LITERARY NOTICES.

LIEBIG'S PRINCIPLES OF AGRICULTURAL CHEMISTRY.—We are glad to see that John Wiley, 107 Broadway, this city, has published in a neat pocket volume, the above-named work, embracing late researches made in England. Dr. Gregory of Edinburgh—the translator of it from the German,—says, that Liebig has been heretofore misunderstood in reference to the "Mineral Theory of Manures." This little work, we hope, will find a place in every farmer's library; for it is worthy of it

THE LONDON QUARTERLY—The last number of this able Review, has just been issued by its enterprising publishers, Messrs. Leonard Scott & Co., 54 Gold street. It contains eight solid and profound articles on the following subjects: The Crystal Palace, Venetian Despatches, Madame de Maintenon, the Forester, Food and its Adulterations, the Emperor Nicholas, Sir Richard Steele, Public Affairs. It is an excellent number. The article bearing the title of Forester, is a scientific one of no small value—it relates to forest trees. Every gardener and farmer in our country should read it.

NORTH BRITISH REVIEW—This profound periodical for this quarter, also published by Leonard Scott & Co., contains a review of Muirhead's Life and Inventions of James Watt,—an article of peculiar interest to engineers and inventors. An article on Sir Walter Raleigh and his Times, should be read by every one who desires to be fully acquainted with the early history of our country. There are five other articles, all good, especially the Military Disasters of England and their causes; it exposes the system of government routine, but lays the blame upon the nation at large.

THE MISSING BRIDE—This is a neatly printed and respectable-looking volume, published by T. B. Peterson, Chestnut street, Philadelphia. The author is Mrs. Emma D. E. Southworth, one of our best novel writers This novel adds to her already justly deserved laurels; it is thrilling from beginning to end.

MOREDUN—This is a novel published by W. P. Fetridge & Co., this city, and said to be by Sir Walter Scott—it being found in manuscript in Paris, and written for a friend. It has the appearance of being genuine, at least no one but a Scotchman could have written it—no Frenchman could have forged the characters in the work. It is not, however, one of Scott's best.

THE NATIONAL MAGAZINE—The July number of this excellent magazine, Carlton & Phillips, this city, publishers, contains a biography of Bishop Scott, of the M. E. Church, with a very excellent wood cut. It contains the "Deserted Village of Goldsmith, beautifully illustrated with eleven wood cuts. It is a capital number.

Inventors, and Manufacturers

The Tenth Volume of the SCIENTIFIC AMERICAN commenced on the 16th of September. It is an ILLUSTRATED PERIODICAL, devoted chiefly to the promulgation of information relating to the various Mechanic and Chemic Arts, Industrial Manufactures, Agriculture, Patents, Inventions, Engineering, Millwork, and all interests which the light of PRACTICAL SCIENCE is calculated to advance.

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